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**The Selection of Potential Undergraduate  
Students who Lack Traditional Qualifications:  
is a toolkit possible?**

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**Ian Stuart Moreton**

**Submitted for the degree of Master of Arts by Research  
School of Education, Durham University, 2016**

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## **Abstract**

### **The Selection of Potential Undergraduate Students who Lack Traditional Qualifications: is a toolkit possible?**

**Ian Stuart Moreton**

Providing opportunities for entry to Higher Education for students who lack those traditional academic qualifications on which selectors routinely base their decisions is an essential element of Widening Participation initiatives. Decisions about who should be offered the opportunity tend to be based largely on the selector's intuition. This thesis uses data from three sources: a review of the relevant literature, a phenomenographic survey, and a personal attributes survey, to identify characteristics linked to success for students, so that measures of these characteristics might be included in a toolkit to inform the selectors' decision-making process.

The phenomenographic study was conducted among 12 Foundation Year teaching staff, 5 current Foundation Year students and 8 prospective Foundation Year students. The personal attributes survey was administered to 70 students enrolled on a range of Foundation Year programmes, progressing to degree courses across a broad disciplinary spectrum.

Quantitative data from the personal attributes survey were compared with The Foundation Centre's standard measure of students' success, the Average Weighted Mean of scores attained for all the modules, in a Pearson correlation analysis. These data were then combined with the qualitative data obtained in the phenomenographic study and data from the literature review, to suggest measurable characteristics that might be predictors of success.

The characteristics identified as relating to students' success were conscientiousness, motivation (in various forms), self-efficacy, resilience, and readiness. There was, however, clear evidence that different characteristics, or different combinations of characteristics, may be needed by students following different academic disciplines.

The study concludes that a single toolkit would be unhelpful, but that a range of toolkits taking into account academic discipline, age-group and sex may be beneficial. Further, the study concludes that interventions for the remediation of perceived deficits in desirable characteristics should be imbedded in Learning and Teaching strategies and recommends further research aimed at the development of these interventions.

### **Abbreviations used in the text:**

A-level:	General Certificate of Education Advanced Level Certificate
AS:	General Certificate of Education Advanced Subsidiary Certificate
AWM:	Average Weighted Mean
FC:	The Foundation Centre
GCSE:	General Certificate of Secondary Education
GPA:	Grade Point Average
HE:	Higher Education
LNAT:	The National Admissions Test for Law
LSE:	Lower Socio-Economic Group
MMI:	Multiple Mini-Interviews
OFFA:	Office for Fair Access
SPA:	The Supporting Professionalism in Admissions Programme
STEM:	Science, Technology, Engineering and Mathematics.
TEF:	Teaching Excellence Framework
UCAS:	The Universities and Colleges Admissions Service
UKCAT:	The UK Clinical Aptitude Test
WP:	Widening Participation in Higher Education.

## Chapter One: Introduction

### 1.1: Widening Participation and the importance of mature students

At least in large parts of the West, there is a belief that we should be trying to build a society in which as many people as possible are free to make choices about how they live and free to achieve their potential. The fairest and most acceptable way to achieve this is seen as being through higher education (Schwartz, 2004, p. 3). This is, of course, an ideological viewpoint stemming from a belief in individual freedom and may not be agreeable in all societies but here, in the UK, widening participation (WP) in higher education is at the heart of government policy and embedded in universities' agreements with the Office for Fair Access (OFFA). In a recent report by Alan Milburn (2012), it is argued that every UK university needs to be actively engaged in initiatives to widen participation and make access to its institution fairer. Both engagement with the community – outreach activities – and admissions processes are seen as areas in which universities can improve their WP performance. This focus on WP is not new. Universities have always sought ways of widening their appeal; their survival and growth has depended on finding new students (more broadly, income) beyond the groups already represented. The label “widening participation” that is used here, though, is more recent, having emerged as a recognised driving force for policies over the last two decades (Higher Education Funding Council for England, 1996; Admissions to Higher Education Steering Group, 2004). Its recognition as an important mechanism for social mobility is well established (Brennan and Naidoo 2008; Panel on Fair Access to the Professions 2009). Economic expansion in the mid twentieth century created

more opportunity, more *room at the top* and access to further and higher education became essential for attaining the credentials needed to take advantage of the opportunities which arose. This trend has continued, and today these credentials are essential if an individual is to have a realistic chance of career progression within the knowledge economy. Education beyond secondary schooling is now seen as a pre-requisite for employment capable of maintaining a middle-class lifestyle (Callan 2008).

Non-traditional students, the targets of WP initiatives, are amongst the students who are in groups underrepresented in higher education. A number of such groups are easily identified, including:

- Members of lower socio-economic groups (LSEs)
- Students with disabilities
- Mature students
- Members of some ethnic minority groups

Other groups may be identified from time to time, such as students from a care background, ex-services personnel, and so on. Tight (2012) suggests that these groups, taken all together, represent the large majority of the adult population, making it perfectly clear that those groups who were traditionally represented in higher education were, in fact, an elite minority. Although these groups of non-traditional students are labelled separately, there are frequent overlaps. A mature member of an ethnic minority group with a disability, for example, can be categorised in a number of ways. Some of the overlaps that occur are of particular interest when considering the importance of one particular group. As

we see in the example given, mature students may also be part of other significant groups. A mature student who is also a member of a lower socio-economic group (LSE) is likely to be categorised as mature, but unlikely to be included statistically in the LSE group because of the way in which institutions gather data, often relying on information about parental income and neighbourhood participation. Students who are admitted to degree programmes using WP criteria are not labelled as such, so statistics, which rely on using a range of criteria that might suggest a disadvantaged background, may not truly reflect the progress that has been made with WP initiatives (Hoare and Johnston, 2011). Opportunities for access to higher education for mature students, then, have the added benefit of allowing academically able men and women from LSEs, as well as from a wide variety of backgrounds, to graduate as adults, when the disadvantages faced in adolescence may no longer present barriers (Egerton, 2000). There is also some evidence that it may be helpful to provide additional sub-categories within the mature student group. Mature students for undergraduate courses are defined as those being over 21 years of age at the beginning of the course, but Baxter and Hatt (1999) suggest that students who are over 25 years of age and returning to education have better outcomes than students between 21 and 25 years of age, whose education has been interrupted. They argue for the disaggregation of this group into old and young mature students.

It is for mature students that Foundation Programmes are particularly useful, providing a pathway into a degree course for those who lack the required levels of skill or attainment for direct entry. In his *University Challenge* report, Alan

Milburn (2012, p. 54) affirms that foundation year courses are “particularly helpful in equipping students from non-traditional backgrounds with the skills necessary to succeed at university”, citing The Foundation Centre at [.....] University as “a superb example”. Figures from academic years 2010, 2011 and 2012 show that The Foundation Centre, which accounted for an average of 4.3% of the university’s yearly undergraduate admissions over these cycles, provided 39.6% of the university’s mature entrants.

## **1.2: Getting in: the admissions process.**

Admissions, the process by which students are recruited, selected and offered places at university, has been described as a gap between raising aspirations and the transition to higher education (Graham and Shaffer, 2011). It is vitally important, particularly for WP students who may be more easily discouraged, that the applicant experience of the admissions and transition processes are positive.

In the UK, applicants for university places are required to apply through the Universities and Colleges Admissions Service (UCAS). This places them in direct competition with all other applicants for the desired course. Although universities do engage with their local communities, often as part of initiatives to widen participation, applicants can seek access to universities anywhere in the UK. Admissions decisions are generally made by academic staff in the relevant university department, based on information contained within the UCAS application. Key to these decisions are judgements made about an applicant’s merit and potential. Academic performance is heavily emphasised as a means of assessing an applicant’s merit, with published entry criteria for each course. This

performance is measured using previous results such as GCSE and AS exams (although a recent study by Laws (2013) has concluded that AS results add little as predictors of final degree outcomes), and predictions of results in A-levels. Alongside this, a personal statement by applicants gives them an opportunity to sell themselves, not only explaining their passion for the subject to be studied, but also laying out all the qualities they will bring both to the particular course and to the wider university community. The heavy reliance on academic performance to determine who should gain entry is considered to make a significant contribution to the continuing inequity in the way in which different socio-economic groups are represented in higher education, and has been called into question in a number of ways. Students from independent schools, with better staff / pupil ratios and facilities than state schools, have better A-level outcomes (Schwartz, 2004) so are more likely to succeed in gaining entry to the university course of their choice. This effect is more pronounced in elite institutions where entry requirements are higher, further fuelling claims of social inequity. Although there is generally a positive correlation between A-level grades and later degree classification, this enhanced performance at A-level by private school pupils does not translate into better performance at university, at the end of which state school pupils may have better degree outcomes. (Smith and Naylor, 2001).

It may also be worth noting that, although increasing emphasis has been placed on the importance of WP, the admissions process itself, with its focus on records of academic achievement, has remained fundamentally unchanged since the Universities Central Council on Admissions (UCCA) began handling university applications in the early 1960's. At that time applications were hand-written and



paper copies were submitted, but the details they contained were similar to those collected electronically today by UCAS, formed when UCCA merged with the Polytechnics Central Admissions System (PCAS) in 1993.

With increasing numbers of pupils leaving secondary education with better A-level grades, the need to distinguish between them, particularly for popular courses at elite institutions, has led some groups to introduce admissions tests; new tools for selecting from these high-attaining groups by testing for qualities considered particularly relevant to the course of study. The Supporting Professionalism in Admissions programme (SPA), set up as recommended by the Schwartz report (2004), defines an admissions test as a ‘timed, unseen, written, paper-based or online test, usually taken in the academic year prior to admission in the summer/autumn term, or at interview.’ (SPA, 2014)

The National Admissions Test for Law (LNAT) was introduced in 2004, and is designed to test ‘verbal reasoning skills, the ability to understand and interpret information, inductive and deductive reasoning abilities, and the ability to analyse information and draw conclusions.’ (LNAT, 2014)

For medicine, the UK Clinical Aptitude Test (UKCAT), introduced in 2006, tests aptitude and attitude rather than academic ability, which has already been tested by A-level performance. It also has specific claims about its importance to the WP agenda:

*UKCAT is committed to achieving greater fairness in selection to medicine and dentistry and to the widening participation in medical and dental training of under-represented social groups.* (UKCAT, 2014)

It is worth questioning how a test which has been developed to differentiate between high-performing, highly qualified candidates with recent academic experience might realistically expect to also identify merit in candidates who have been disadvantaged in some way, or out of formal education for some time. Evaluation of the test continues.

There are other admissions tests designed to identify, from amongst the pool of high-achievers, students most suited to specific courses. There are mathematics tests, history tests, English tests – the list is long and, as may be expected, the elite Oxford and Cambridge universities use more of them. SPA has worked with UCAS to provide data about the tests (SPA, 2014).

So much for the high-achievers, but the concern that deserving and capable WP students may not be included in this group is very real. Students who do not have the excellent record of academic achievement on which admissions decisions are traditionally based may be capable of succeeding on a degree programme, but their educational disadvantage makes their access to such a programme less likely. Hoare and Johnston (2011, p. 25) have suggested ways in which educational disadvantage might arise:

- *personal circumstances – such as age (mature students may lack access to a formal educational environment with the support that implies, or have to squeeze study time around family care or employment) or study-affecting disability (e.g. visual impairment, chronic illness, dyslexia);*

- *family/household circumstances – these may place little value on educational attainment, academic study and post-school progression, with a lack of resources, monetary and otherwise, to support it even if valued, as well as of graduate-educated role models in the family circle;*
- *neighbourhood/community – a student's local environment may provide a similar low priority and peer-group status accorded to education and academic attainment, and a dearth of counterbalancing local role models; and*
- *schooling – attendance at poorly resourced and poorly performing schools, lacking not just material resources but also enthusiasm, experience and advice to support university applications, plus no collective valuing of academic achievement from student peers, and a diversion of scarce teaching time to maintaining discipline.*

Once again, there may be overlaps between the categories, for example, a mature student who attended a poorly resourced school and whose family circumstances placed little value on education is disadvantaged in a number of ways. At the point when he or she makes a university application, in the competitive UCAS system, these disadvantages may serve to make it particularly difficult for him or her to show his or her academic potential. Aside from qualifications, access to guidance about writing a personal statement will be limited, as will access to suitably qualified referees. These factors need to be taken into account by

admissions staff when assessing such applications, so as to minimise barriers to satisfying requirements, as laid out in the principles of the Schwartz report (2004).

Taking such factors into account is far from straightforward, and presents significant difficulties for admissions staff. Pre-application engagement with students is particularly helpful for both sides and much time may be spent meeting potential applicants to ensure they have access to all the information they need, advise on what may be the right course for them and guide them through the process. The report of The 1994 Group, *Enhancing the Student Experience* (2007, p. 16) noted how influential pre-engagement initiatives could be:

*A student's experience of university does not begin at the moment they step onto campus at the beginning of October, and it does not end when they are shaking the hand of the Vice-Chancellor at graduation. The early relationship between student and university is important during the applications and admissions process, in preparing students for university life, and to initiate their engagement with and attitudes towards their university in the best way possible.*

Even so, experienced admissions tutors who are skilled at identifying merit and potential outside the confines of outstanding school grades and between the lines of personal statements, when asked how they do it, have difficulty articulating the processes they use. This is problematic, first because it is difficult to pass on these skills to new staff, and second because if these processes cannot be articulated, they cannot be communicated to aspiring applicants. One experienced admissions tutor questioned about the selection process suggested

that it was easier to identify undesirable characteristics and admitted that she was more likely to reject an applicant because of such characteristics than to make choices based on positive attributes. It is difficult to see how candidates might be made aware of such a practice, so there is little chance of clarity or transparency.

Transparency in admissions is another of the guiding principles that formed the core of the Schwartz report, so it is important that processes used in selecting students can be published, and in a way that can be understood by applicants. It has been suggested that achieving this goal, although given much attention by institutions, policy-making bodies and regulators, still has some way to go. In a recent conference address, Professor Tom Ward, Pro-Vice Chancellor at [.....] University described his experience when helping his son through the process of university application. Ward considered that even he, from his advantaged position of knowledge of the system, could make little sense of the entry requirements of any of the universities looked at, and suggested that any progress on transparency seemed to be mostly to the benefit of the regulators, and did not meet the needs of the applicant (Ward, 2013). Progress on transparency has been made since 2004, but there is still work to be done, and the focus needs to be on the applicant experience.

### **1.3: Fair access**

If we are to succeed in the WP aims of fair and wider access to higher education and continue to improve the diverse nature of our student body, ways of removing barriers to access for educationally disadvantaged groups need ongoing

development, informed by evidence and research. Contextual data helps institutions to identify which students may be disadvantaged in some way, and some of this data is collected and disseminated by UCAS, but it is not helpful in identifying merit and potential. If we are to identify students with merit, but without conventional academic credentials, and the potential to do well at university, we need to target the qualities that contribute to student success. Personal qualities that may lead to successful outcomes are to be investigated. Before we look at these qualities, it may be helpful to give an idea of what we mean by success.

#### **1.4: Success in higher education for the non-traditional student**

In the context of undergraduate entry to higher education, it is reasonable that success should be measured by degree outcome. Measurements such as completion of the degree programme and degree classification are appropriate. For the non-traditional student it may also be worth bearing in mind other, more difficult to define but nonetheless desirable, outcomes that could be classified as success. It may be impossible to measure the value to an individual of gaining a particular competence such as effective written communication, if that individual fails to complete the whole degree programme because of some unexpected obstacle. The new competence will certainly be valuable and it may be reasonable for it to be counted a success for the individual, even though the overall outcome does not match initial expectations. A trawl through the learning outcomes of the various modules a student will encounter during his passage through the programme will reveal a plethora of competences that may be gained, even by a student who is required to withdraw. For this study, which

is investigating possible predictors of outcomes for non-traditional students entering higher education through a foundation programme, a suitable measure of students' success might be their academic results at the end of the foundation year. It would also be helpful to include in ongoing research their outcomes at the end of the first year of the degree course, since at this stage as well as at graduation, their outcomes can be compared with those of traditional students entering via the conventional route.

### **1.5: Noncognitive testing**

Heckman and Rubinstein (2001) suggest that the importance for success of a range of noncognitive skills is common knowledge, but that the world of education lagged behind the business community in making use of this knowledge. Their study uses evidence from the General Educational Development testing programme, carried out in The USA among high-school drop-outs, to show that non-cognitive factors have a measurable influence on success as measured by a variety of factors. That standardized academic testing should be supplemented by the assessment of noncognitive variables has been suggested by Sedlacek (2004). He argues that such assessment gives a more complete picture of the student, filling the important gaps left by conventional academic tests. A more recent study by Nagaoka et.al. (2013), identifies five categories of noncognitive factors which contribute to academic outcomes. These categories are:

- Academic Behaviours; all of a student's academic qualities, whether cognitive or noncognitive, are expressed through his or her academic behaviours. The good student is identified through positive academic behaviours, such as attendance and completing assignments. Conversely, the poor student may be identified through academic behaviours which are seen as negative, such as failing to engage with the material, non-attendance and not handing in assignments. Even capable students whose academic behaviours fit this second pattern are unlikely to succeed, as their teacher is unlikely to be able to make informed judgements about their skills or knowledge.
- Academic Perseverance; students who are able to overcome obstacles, remaining focused on the task whether it be a single assignment or a longer term goal, are said to have academic perseverance. Duckworth and Seligman (2005) have called this quality of perseverance grit.
- Social Skills; The authors of the study include social skills as an important contributor to academic outcomes, but have found that evidence supporting the impact of positive social skills in this context is scant.
- Learning Strategies; these strategies are described as techniques, steps or actions which individual learners develop to suit their own style. They are an important contributor to self-efficacy.
- Academic Mindsets; these mindsets are about the way in which students identify themselves academically. Belief in ability, a sense of belonging



and of the value of the work, and self-efficacy are contributors to academic mindsets.

I will review some of the literature regarding these contributing factors in Chapter Two.

### **1.6: Context of the study: The Foundation Centre.**

The Foundation Centre's (FC) main focus is on providing opportunities for students who would not otherwise be able to access UK higher education. There is considerable competition for places; figures for the most recent admissions cycle, for the academic year 2016-17, show that there were 1565 applications for 188 places. For every place, then, there were more than seven disappointed applicants, for whom the rejection is likely to have been strongly felt. This competition for places means that robust selection processes are vital not only to ensure fair access, but also to ensure transparency of fair access. Staff commonly express the view that they are wholly committed to the principles of WP and strive to provide all possible support before, during and after the application process.

The benefits to those who are successful, around 80% of students who join a FC programme, are clearly evidenced in a student's own words as reported by Marshall (2016, p. 187). The student, called 'Matt' in Marshall's account, had left school with no formal qualifications and joined the armed forces. On his return to civilian life and despairing of the lack of career choices, he joined the FC and went on to become a general medical practitioner. Here he describes the benefits of being accepted to study:

*. . . just it's unbelievable, the trajectory, that's the thing, it alters the trajectory of where your life, where your kid's life is going to go after that, it's mind blowing, it really is.*

Recognising the impact that HE has had for him, 'Matt' is now seeking to provide some funding, in the form of bursaries, to help other foundation students on their journeys.

FC study programmes are tailored to suit a range of students progressing to degree courses in all university departments. These programmes include some discipline-specific subjects, developed and monitored in conjunction with receiving departments, as well as some core subjects aimed at inducting students into the academic community of practice. Students fall into four main groups:

1. Those who have delayed entry to HE for a variety of reasons. They may have gone into the workplace, started a family or travelled. Many of these students, whose education has been interrupted, fall into the 21 – 24 age group. They may not have attempted A- level study before leaving full-time education.
2. Those who have decided later in life to embark on HE. Some will have established careers with which they have become dissatisfied or need better qualifications to make career progress; some may have had poor experience in the school system resulting in a lack of belief in their suitability for academic study; some may have joined the armed forces at 16 years of age and have completed their service. Many will lack any post-16 qualifications, although a few who are seeking to change

direction may be qualified to degree level and beyond. Most of these students fall into the 25 – plus age-group.

3. Those from overseas. These students are from countries where the education system does not provide an equivalent to the British A-level standard. They do, however, often have recognised academic qualifications but are generally unused to UK teaching approaches. The large majority are under 21 years of age.
4. Those who are changing between academic fields. Typically, these are under 21 years of age.

Students in groups 3 and 4, with their established record of recent academic achievement, do not present the problems of selection associated with those in groups 1 and 2. It may be helpful, however, as suggested by Sedlacek (2004), to add to our information about all students by using some assessment of noncognitive factors.

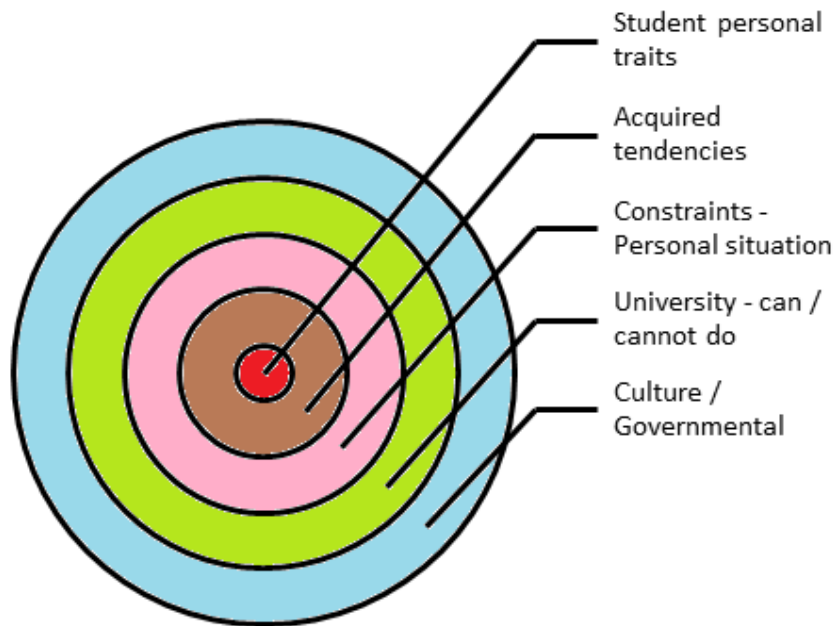
The aim of this study, then, is to attempt to identify meaningful predictors of success for undergraduate students who lack traditional entry qualifications, in order to inform the selection process. Before reviewing some of the literature regarding such possible predictors, some consideration needs to be given to where such factors are positioned in the overall picture of an individual's path to a degree.

### **1.7: Success factors arranged**

Factors that bear on a student's likelihood of success in higher education range from personal qualities to the cultural background that exists around the student's

situation. Figure 1.1 shows how factors might be arranged in an onion-skin model.

**Figure 1.1: Factors bearing on a student's aptitudes / likelihood of success**



The outer skin of the model deals with factors which involve the general cultural background surrounding the student, such as government policy on higher education provision. As the layers are peeled away, factors become less general and more focussed on the individual until, close to the core of the model, factors are entirely individual and personal.

The outer layer includes the currently prevailing political will for WP, so that a non-traditional student should be able to find a place on a suitable degree programme, provided that all other criteria are met. The second layer requires that the student now find a university that can provide a course appropriate to his needs. Choices about courses need detailed information to be available and this is

an important service for institutions to provide. Such choices are also likely to benefit from advice and guidance, so this is the stage at which pre-application engagement with the potential applicant becomes important. For some mature students, this dialogue may begin more than a year in advance of any application. As we move to the third layer, there may be a blurring of the line. Constraints are likely to include factors such as finance and family responsibilities. It is unlikely, for instance, that a mother living in North East England whose children attend a local school, would have a realistic chance of successfully completing a degree course at a university in London. Her choice of universities is likely to be limited to those in her region, so her choice of courses is immediately reduced.

Acquired tendencies are close to the centre of the success model because they are specific to the individual and, whilst influenced to some extent by factors in layers further out, bear closely on the personal traits that we see at the core of the model. These tendencies use an individual's knowledge, experience, feelings and assumptions to contextualise a situation, so that different individuals will see that situation in different ways, and react with different attitudes. Some of the attributes described above as important factors for student success, such as self-efficacy and learning conceptions, are included in this layer. In the centre, amongst the personal traits are found those core attributes of conscientiousness and hardiness, along with motivation and resilience which are influenced by the acquired tendencies of the layer beyond.

Figure 1.1 will inform some of what follows.

## **Chapter Two: Review of the Relevant Literature**

The onion-skin model of factors bearing on success for a student, described in chapter one (Figure 1.1), has at its core the student's personal traits. Enclosing this core is the layer which houses the student's acquired tendencies. This chapter will explore some of the literature relating to the attributes contained in these two layers and their relevance in predicting an individual's likelihood of success in HE. In particular, it will consider attributes like:

- Conscientiousness
- Hardiness
- Motivation
- Self-Efficacy
- Resilience
- Readiness for Higher Education

### **2.1: Conscientiousness**

Of the "Big Five" personality descriptors: neuroticism, extraversion, conscientiousness, agreeableness, openness to experience (Digman, 1990), the construct which has been most often linked to student success is conscientiousness.

Conscientiousness is generally taken to describe responsibility and dependability, along with persistence and good organisation. It is this factor that can be seen to provide evidence of the positive academic behaviours described in Chapter One. According to Trautwein et al. (2009), conscientiousness is one of the antecedents of effort, which is crucial to achievement. Individuals who exhibit

conscientiousness, they say, are characterised as being hardworking and industrious, systematic, dutiful and striving for achievement, so it is not surprising that it is the Big Five factor most commonly connected with success and achievement. Many studies have explored this connection. Busato et al. (2000, p. 1064) found conscientiousness to be a “consistent and positive predictor of academic success”, although they found that none of the learning styles included in their study was positively associated with such academic success. Using evidence from two longitudinal university studies carried out over a three-year period Chamarro-Premuzic and Furnham (2003, p. 333) found conscientiousness to be “the most important correlate and predictor of academic performance, in line with previous studies”. They further suggested that measures of personality factors should be considered in situations where attempts were made to predict academic performance. Conard (2006) also found conscientiousness to predict academic criteria, and suggested that measuring personality may be useful for admissions. Duff et al. (2003, p. 1917) found that “conscientiousness produced the largest correlation coefficient between the Big Five factors and academic performance”. Nofle and Robins (2007) found that conscientiousness was a strong predictor of high school and college GPA, while Wagerman and Funder (2007) showed conscientiousness to be “a valid and unique predictor of college performance” (p. 221). They concluded that personality factors should form part of the admissions process for HE because, unlike academic performance indicators, they showed no difference as predictors across ethnicities. Cela-Ranilla, Gisbert and de Oliveira (2011) investigated personality traits when associated with students using different learning styles (Sequential, Precise, Technical, Confluent), and concluded that academic

performance is positively influenced by conscientiousness. In a study of factors affecting academic success, Marshall (2013, p. 36) found that, “using previous study at A-level for mature, non-traditional students is not the best indicator of potential, but that attitudinal attributes, specifically those correlated with conscientiousness are much better indicators of success”. In The Netherlands, a study conducted by Van Bragt et al. (2010) similarly confirmed a strong positive correlation between conscientiousness and academic performance, not only in terms of grades, but also in terms of continuance. Apart from gaining more academic credits, students with higher scores on conscientiousness were found to be less likely to drop out. The Netherlands study also found a negative correlation between academic success and students’ scores on the learning conceptions of Ambivalence and Lack of Regulation. Ambivalence is described as having a variety of motivations to learn, but none in particular. Lack of Regulation describes a student who does not know what, when or why to do things. The importance of this finding is that it underlines the need to be aware of possible characteristics or orientations which have negative correlations with successful outcomes, as they may be equally important indicators as those which have positive correlations.

It is conscientiousness, of course, which is a major component of the academic behaviours described in Chapter One. Without this attribute, students are less likely to meet attendance requirements or produce assignments as required, both of which are desirable academic behaviours, giving tutors the information they need on which to base assessments.



## 2.2: Hardiness

Following the pioneering work of Kobasa (1979) in the context of adults coping with stress, the notion of hardiness, with its component constructs of control, commitment and challenge, has been developed in relation to students' success (Maddi, 2006). Control is demonstrated by those who overcome difficulties so as to continue to exercise control over what is happening. Commitment is demonstrated by those who feel closely involved with (and committed to) their activities, so that stressful events are mitigated by sense of purpose. Challenge is demonstrated by those who embrace, and are stimulated by, change (Maddi, 2006). The hardy individual, Maddi suggests, is one who is able to deal with stressful situations in a way that promotes personal growth, rather than personal disaster. A positive relationship between hardiness and academic performance was confirmed in a study by Maddi et al. (2007), who found this relationship in all of the eight groups of undergraduate students in their sample. Sheard and Golby (2007), also studying hardiness among undergraduate students, found that the hardiness construct of commitment was significantly related to academic success. Overall hardiness was also found to have a moderating effect on performance but, surprisingly, challenge showed a negative correlation.

Similar qualities have been described by Duckworth et.al. (2007) as "Grit", defining this as "Perseverance and Passion for Long-Term Goals" (p. 1087). Their study is quite clear in distinguishing grit from conscientiousness and self-control, as well as from need for achievement, because of its unswerving adherence to objectives, with either implicit or explicit rewards, over an extended time-frame. Grit, they suggest, is of importance to any undertaking where

sustained effort and interest is needed. This attribute is the major component of academic perseverance described in Chapter One.

### 2.3: Motivation

Motivation is a term in common use, but which may be understood differently by different people and in different situations and there seems to be some disagreement about its precise nature. Certainly some sort of action would seem to be implied, as suggested when *motive* is seen in other contexts, such as *locomotive* or *electromotive* force. Schunk, Meece and Pintrich (2014, p. 5), define motivation as “the process whereby goal-directed activities are instigated and sustained”, and this definition does seem to embody the required elements of goals, activities and a process that can underpin academic programmes.

Motivation to learn is central to students’ success. The motivated student’s beliefs lead to constructive behaviour (activities) that focuses on what is needed to produce successful outcomes (attain goals). According to Dornyei (2001, p. 18), motivation is highest when people are competent, have sufficient autonomy, set worthwhile goals, get feedback and are affirmed by others. Robbins et al. (2004) found strong evidence associating motivational constructs with performance in HE.

Vermunt (1992) described five different motivational orientations:

1. *Certificate oriented; aiming at getting a degree,*
2. *Vocationally oriented; aiming to become a member of a certain professional community,*
3. *Self-test oriented; aiming to prove to be able to reach one’s own goals and prove one’s own capacities,*

4. *Personally interested; working from a personal interest in the subject studied,*
5. *Ambivalent oriented; various motivations to learn, but nothing in particular.*

The last category here, Ambivalence, has been shown to have a negative correlation to success, as mentioned above (Van Bragt et al., 2010).

The psychological study of motivation is complex and dynamic, historically changing from a drive perspective which was biologically based, through behavioural models to a cognitive perspective. Central themes in more recent research are the role of affect and less conscious processes (Eccles, Wigfield and Schiefele 1998, cited in Dornyei 2001, p.19). Five contemporary theories describing the construct of motivation have been compared by Cook and Artino (2016). Their study considered the differences and similarities between:

- Expectancy-value theory – motivation is determined by the student's expectation of success and the value attached to the goal.
- Attribution theory – motivation is determined by an individual's attribution of the causes of success or failure.
- Social-cognitive theory – motivation is related to the student's observations of behaviour and outcomes in others.
- Goal-orientation theory – motivation is towards the achievement of a core goal or goals, with shorter-term proximal goals paving the way.
- Self-determination theory – motivations are intrinsic or internalised.

The authors identified four common themes among these theories: competence beliefs, value beliefs, attribution and social-cognitive interactions (p. 1011), but expressed concern about the confusion that could arise from researchers failing

to be specific about the nature of the motivation measured in their study. Among their conclusions is a call for exploration of the various motivation theories with particular reference to their role in the field of education, so as to offer further clarity. These themes are outside the scope of this study, which aims to explore relationships between personal attributes and success in higher education, rather than exploring the nature and construction of the attributes themselves, but the importance of motivation as a factor influencing success cannot be overstated. A student's motivation to study will have a direct bearing on why they want to study, how long they will sustain the study and how hard they will work towards their goals. Motivation forms part of the academic mindset described in Chapter One.

## **2.4: Self-efficacy**

Self-efficacy, an important mediator of motivation, has been offered as a significant factor bearing on student performance, and it should be considered along with the other factors. Described as “the belief in one's capabilities to organize and execute courses of action required to produce given attainments” (Bandura 1997, p. 3), self-efficacy asks the question “can I do this?” When the question is applied by a student to either core or proximal goals, it is an essential component of motivation, and a student who answers in the negative may set lower goals. Zimmerman (2000) affirms self-efficacy as a predictor of students' motivation and learning. A longitudinal study carried out among first-year university students by Chemers, Hu & Garcia (2001) found powerful relationships between self-efficacy and academic performance in a campus setting they describe as “non-traditional” (p. 62). Voung, Brown-Welty and Tracz (2010) have also found that self-efficacy impacts on grades for college

sophomore students. Patchin (2016, p2) posits that self-efficacy “plays a key role in student success for undergraduates in all fields of study”. Robbins, et.al. (2004), in a study designed to clarify the place of psychosocial and study skills factors in predicting post-secondary outcomes, identified academic self-efficacy as being among the strongest psychosocial predictors of first-year college grades and retention. They defined academic self-efficacy as “self-evaluation of one’s ability and/or chances for success in the academic environment” (p. 267). Their study also expressed some concern at the lack of definition regarding success predictors, largely due to the wide ranging research across psychological and educational domains. The psychologists’ research, they suggest is “theoretically rich”, but does not seem to be “embedded within programmatic research focused prospectively on college success” (p.263). The educational research, on the other hand, is “limited by atheoretical constructs and single-item survey measurement” (p.262). Self-efficacy is, however, subject to change through experience – particularly repetitive experience (Bandura, 1977) – so that students who are educationally disadvantaged may have lower levels of self-efficacy as a direct result of this disadvantage. Rather than using this attribute, which is linked to success (Zimmerman, 1995), as a factor to be considered when selecting students, it may be more appropriate to provide remediation within the learning and teaching process that will help to reinforce positive self-efficacy.

## **2.5: Resilience**

Self-efficacy and Hardiness are both contributors to resilience, another important factor in student success. Resilience concerns a set of behaviours which allow an individual to adapt to, and recover from, difficult circumstances or events. It is

not easy to define, but often easily recognised. Films like *The Pursuit of Happyness* [sic], based on the life of Chris Gardner who, while caring for his 5 year-old son, battled with homelessness and destitution as he worked to make a better life for them; lives of public figures like *Nelson Mandela*, who inspired a generation worldwide; fairy tales like *Cinderella*; all present us with characters who display resilience. They succeed against the odds, so that we admire them and are drawn to them. Again, it seems that the business community has led the way in taking advantage of psychologists' work to aid in promoting success. In an article published in the Harvard Business Review (Coutu, 2002, p.47), the importance of resilience is given strong support:

*More than education, more than experience, more than training, a person's level of resilience will determine who succeeds and who fails.*

*That's true in the cancer ward, it's true in the Olympics, and it's true in the boardroom.*

Wayman (2002, p. 168) suggests that we might define resilience as “a multifaceted phenomenon that enables individuals to succeed, despite adverse conditions or outcomes”.

As well as showing self-efficacy, resilient individuals tend to be optimistic and goal oriented, have coping skills and take personal responsibility for actions and outcomes. According to Wang et al. (1998, p. 3), resilient individuals exhibit a high level of engagement and a sense of “personal agency”. Their study goes on to underline the link between these qualities and educational attainment. In her thesis investigating experiences in HE of ex-army personnel, Webb (2014, p. 153) found resilience to be “salient to widening participation initiatives in higher education”, suggesting that a protective shell of resilience helped alienated

students to flourish. In their profiling study of university inductees' resilience, Allen, McKenna and Dominey (2014) found positive links between the resilience of inductees and their academic performance. Johnson et al. (2015, p. 880) believe that they have illustrated a link between resilient students and academic achievement, in that such students use "adaptive regulatory strategies".

## 2.6: Readiness

Readiness for higher education has been recognised as an important factor for success, in terms of both grades and retention. While researching academic readiness among some minority groups, Walton (1979) found that students who were not members of minority groups may also lack some of the attributes needed to succeed as American college students. Among those attributes he included maturity and the ability to fit in to the academic community. It is this "fitting in" that can prove to be a marked barrier to success for some non-traditional students, and even some students who do succeed may continue to feel insecure in the academic community long after they have shown themselves to be capable of success as measured by normal methods. Sometimes referred to as "impostor syndrome", and experienced even among doctoral research students, this can impose too great a barrier for some; these are unlikely to progress to graduation. Walton's notion of readiness continues to interest researchers (e.g. Cheon et al., 2012; Merriam, 2001; Tomlinson et al., 2003), with the construction of questionnaires to gauge its presence (e.g. Purnell & McKavanagh, 2007), readiness scales (e.g. Hoban et al., 2005), and assessment approaches (Sampson et al., 2000). Walton set out to explain disparity in academic performance between students with apparently similar academic credentials in post-secondary education in the USA. Attributes which explain

disparity in academic performance remain relevant, and are now more pressing because of WP initiatives. College readiness turns out to be an important factor, and has become a focus for many programmes of research and remediation. Recognising that students need not only academic skills and knowledge, but also a range of noncognitive factors, has become the basis for programmes aimed at helping students become “college ready”. David Conley (2008) has described this readiness as bearing on a student’s likelihood of making a success of the transition to HE, and being a measure of how previous experiences, both educational and personal, have equipped them for the expectations of the HE institution. Conley includes amongst the elements considered important for readiness not only the academic skills and knowledge, but also a range of “contextual skills and awareness” (Conley, 2008, p.10). Included here are skills needed to gain admission, which may be more accessible to some sections of society than to others, and to subsequently connect with the academic community. For many non-traditional students, who may be first-generation entrants to HE from their family, alienation is a real possibility. The need to interact with a wide range of others, including peers, academics, administrators and support officers is likely to come as significant culture shock if they have not made suitable preparation. For some groups of students, who may be typical in a UK foundation programme, such alienation can be compounded if they have not made adequate provision for their caring responsibilities, thought about financial management, or the time demands of their study outside of the classroom. At this point, the literature suggests that there are attributes which might usefully serve as indicators of future success in academic work. Such attributes, if shown to be useful, should feature in the selection process, perhaps as part of an



admissions “toolkit”. At the same time, there will be students who lack some attributes and may, perhaps with help, acquire them, and hence be successful. The acquiring, teaching and habituating of such behaviours has also received some attention in research which partly overlaps that already described.

## **2.7: Remediation of Conscientiousness**

Dumfart & Neubauer (2016), in a study designed to investigate the impact of specific personality factors, including conscientiousness, on school performance, concluded that “conscientiousness is *the* crucial noncognitive trait in school achievement” (p. 14). They suggested that schools should focus on training some conscientious behaviours, such as punctuality, attention to task, etc., and that such interventions would take little effort but might make significant improvements to outcomes for students. There is some doubt, however, about the effectiveness of interventions designed to remediate conscientiousness. Della Porta (2013, p. 55) found that perseverance could be improved by teaching a range of self-regulation skills, but that these new skills did little to change the broader trait of conscientiousness.

Some researchers suggest that personality factors such as conscientiousness are set by the age of thirty and unchangeable after then, but this has been refuted by Srivastava et al. (2003), whose study concluded that conscientiousness continued to increase throughout the age range of their sample (up to age 60), albeit at a slower rate after the age of 30. The Invest-and-Accrue Model of Conscientiousness proposed by Hill and Jackson (2016) provides a feedback-loop type of system in which conscientiousness increases as a result of positive reward of conscientious behaviour. This may be useful in finding suitable

interventions for remediating this aspect of personality, and could be a fruitful area for future research. Other researchers recommend that, because certain behaviours associated with learning may be more easily changed than personality characteristics, interventions aimed at changing those behaviours should be considered. Van Bragt et al. (2010, p. 71) believe that effective and timely feedback on students' performance can be particularly useful in reinforcing positive academic behaviours and supporting students who may be at risk of failure or withdrawal.

## 2.8: Remediation of Hardiness

Hardiness training has been considered by researchers and found to significantly increase students' hardiness and hence academic performance (Maddi et al., 2009). The researchers further found that the process of increasing hardiness continued "long after the (training) course is over, indeed, throughout life" (p. 574). The hardiness training focused on five areas, as laid out in the course text, *The HardiTraining Workbook* (Khoshaba & Maddi, 2001). These areas include coping, social support, relaxation, nutrition and exercise.

In a paper prepared for The US Department of Education, Shechtman et al. (2013), concluded that grit, tenacity and perseverance had a vital part to play amongst important noncognitive factors. Amongst their discussion of research-based best practices to promote these factors, the researchers found that:

1. *Students need to have the opportunity to take on long-term or high-order goals that, to the student, are "worthy" of pursuit.*

2. *Students need a rigorous and supportive environment to help them accomplish these goals and develop critical psychological resources.*

(p. 77)

The study also pointed out that, although there was good research evidence that grit could be promoted through these practices, methods for integrating these practices in educational situations were still in need of development. The authors further refer to “the growing body of research demonstrating that relatively brief interventions (e.g., 2 to 10 hours) can significantly impact students’ mindsets and learning strategies”. (p. 81)

## **2.9: Remediation of Motivation**

I have mentioned already that the business community has led the way in applying psychologists’ work, particularly with regard to noncognitive factors, to aid success both for individuals and organisations. Motivation provides us with the strongest possible evidence of this. Motivational speakers, motivational training, goal-setting in order to stimulate motivation, motivational music; the world of business and entrepreneurialism seems to be awash with such initiatives. Many such initiatives are aimed at ways in which material goals (big house, fast car, exotic holiday, monetary wealth) might become internalised, making extrinsic motivators behave more like intrinsic motivators, so that the subconscious mind takes over in the pursuit of these goals and influences decisions which bring an individual closer to the goals. Methods used to accomplish this internalisation vary, and include daily mantras, the writing of clear and specific goals in a manner that suggests such goals have already been attained (“I drive the red Ferrari into the seven-car garage at the end of my long drive ...”), and so-called “vision boards”, which contain images of the various

goals and are placed prominently so as to be seen often. The very titles of some self-help publications give clear indications about their intentions: “Think & Grow Rich” (Hill, 2007), “Rich Dad, Poor Dad: What the Rich Teach their Kids About Money, and the Poor and Middle Classes Do Not” (Kiyosaki, 2011), “Seven Strategies for Wealth and Happiness” (Rohn, 1996). In “A Happy Pocket Full of Money”, Gikandi (2008) uses quantum theory to explain why, by focusing on the correct thoughts, you can have everything you want. The authors provide anecdotes from satisfied readers who endorse the efficacy of the methods described, but for some the internalisation of such extrinsic motivators is a leap too far.

Although some way behind the business community, educators have long understood the importance of motivation and ways of improving students’ motivation have been an important part of the training curriculum for teachers. Dweck (2000), reflecting on her research experiments, expresses amazement at how people can be taught, in one session, “a ‘new’ version of the self, influencing their motivation and behavior” [sic] (p. 143).

## **2.10: Remediation of Self-Efficacy**

Because Self-Efficacy is directly influenced by a student’s beliefs about his or her own academic capabilities, remediation is possible through experiences which reinforce positive self-belief. Zimmerman (2000, p. 89) found that “self-efficacy has proven to be responsive to improvements in students’ methods of learning. In an experiment to evaluate the effectiveness of manipulating efficacy beliefs using carefully structured feedback during a new task, Bouffard-Bouchard (1990) found that “perceived self-efficacy was related to both task persistence

and to ability to evaluate the correctness of responses” (p. 361). More importantly, students who had received positive feedback and thus had higher self-efficacy, set higher goals, were better at problem-solving, performed at a higher level and were better at self-evaluation than the students in the group whose feedback was less positive. As well as being related to a student’s belief in his or her own academic capabilities, Chemers, Hu & Garcia (2001) found self-efficacy to be strongly related to students’ belief in their ability to cope with the general demands of college life. Ensuring that new students entering HE are given support that will help them to be optimistic and confident, rather than stressed and threatened, should help to promote positive beliefs about their coping capabilities.

### **2.11: Remediation of Resilience**

It has been suggested that resilience may be effectively remediated using peer mentors. Johnson et al. (2015) studied the effect of models (be like me) and messengers (do what I say) of resilience on undergraduate students. Both models and messengers affected some development of resilience in the sample, but the undergraduate students’ resilience was more strongly influenced by people who they saw as being models, rather than those whose behaviour they saw as being at odds with their advice – the messengers. Among their conclusions they recommend the pairing of students who are struggling with appropriate (peer) models in an effort to aid the development of resilience in the struggling student. Yeager and Dweck (2012) suggest that students can become more resilient if they understand that intellectual ability can be developed, and recommend strategies, including the help of others, to promote this understanding. They also suggest that this understanding of the capacity to change can be applied to social

skills, another source of concern to students transitioning to HE, particularly if they come from non-traditional backgrounds.

## **2.12: Remediation of Readiness**

Readiness has become of increasing interest to researchers in the USA, as educators try to tackle issues that lie between expectation (most high-school students expect to go to college) and outcomes (graduation numbers remaining static) (Sedlacek, 2011). High-School interventions to promote development of noncognitive skills desirable for success and retention have been introduced in many states. Academic behaviours, particularly those which are self-governed, are included here, as well as contextual skills and awareness such as those needed to find and apply to an appropriate course. Sedlacek (2011) also comments on how students already in HE might develop noncognitive skills through structured courses such as those provided by Sedlacek, Benjamin, Schlosser & Sheu (2007). Such American initiatives are helpful, addressing issues also faced by UK institutions.

The evidence for the effectiveness of remediation is, at times, somewhat mixed. Expectations of such effectiveness may also need to be tempered with consideration of cultural context. Strategies which are applied in cultures other than those in which they have been tested (much of the research has been in The USA), may not result in the same outcomes. The various attributes are often complex and people are diverse, so a uniform success may not be readily attainable.

## Chapter Three: Methods

The reader will recall that the overarching aim of this study was to attempt to identify meaningful predictors of success for undergraduate students who lack traditional entry qualifications, in order to inform the selection process. This entailed collecting data as follows:

1. A review of the relevant literature to identify what existing research already tells us. (See Chapter Two)
- 2(a). Views of teaching staff about which characteristics may be desirable for a student to be successful.
- (b). Views of current students about which characteristics may be desirable for a student to be successful.
- (c). Views of potential students about which characteristics may be desirable for a student to be successful.
3. A study of the relationship between students' success and a range of personal attributes.

This is summarised in Figure 3.1.

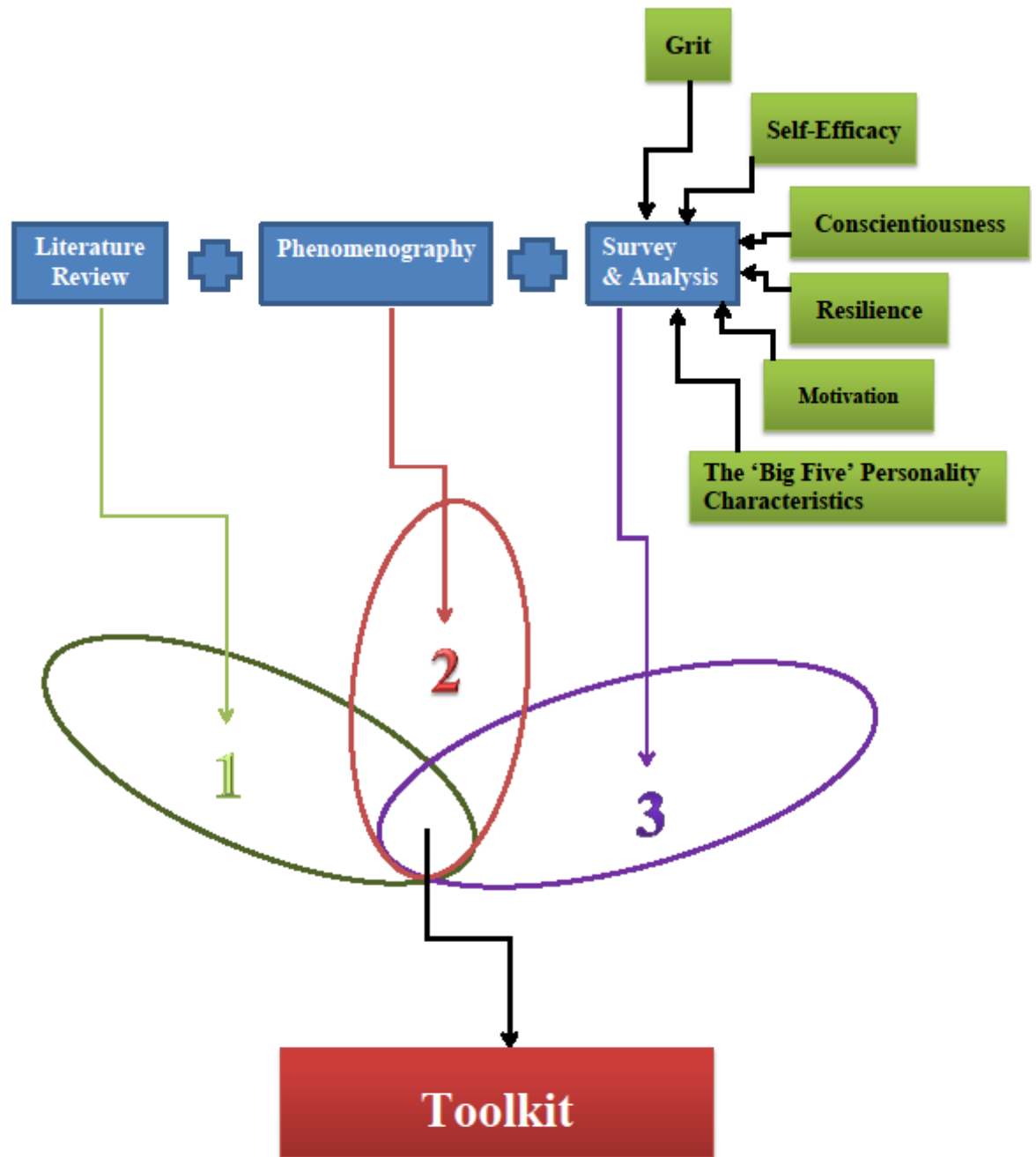


Figure 3.1: Idealised Schematic of Possible Contributors to a Toolkit



### 3.1: A phenomenographic approach

As we have seen, a review of the literature has provided a variety of evidence about what contributes to a student's success in Higher Education, but it would be a mistake to ignore another rich source of valuable information. Foundation Centre staff have a wealth of experience in teaching, guiding and mentoring non-traditional students, and their conceptions, based on this wealth of experience, of what characteristics contribute to successful outcomes for students, can be a valuable addition to this study. Students themselves may also have a valid contribution to make based on their own reflections. As a first step it may also be of interest to explore conceptions of what may be needed for success among pre-application students, those who are beginning to engage with a foundation centre for information, advice and guidance. These three disparate groups may be expected to have quite different conceptions, with experienced foundation centre staff having a more considered and authoritative voice. Exploring all three voices was considered important, to add depth and balance to the study.

Gathering data of this type, in which participants conceptions are explored, can be successfully accomplished using Marton's phenomenographic method (e.g. Newton and Newton, 2009), and it is this method that was used here. The procedure was as follows:

- Participants were interviewed and their responses recorded. To ensure minimum influence on the responses of the participants, there was no preparatory questionnaire and interviewees were asked to respond to the question: *What qualities are important for a non-traditional student to*

*be successful in higher education?* Some adjustment to the question was made when interviewing students, so as to ensure there was no confusion about what was meant by “non-traditional students”. In these cases the question was couched in terms that enabled the interviewee to identify him / herself in relation to the question. Interviewing techniques were used to elicit maximum response, clarifying and extending, without influencing the content of that response. For example:

- “Bridging” questions were used to encourage expansion on short statements. Bridging questions include: Meaning...?, For Example...?, Which means...?. All such questions were followed by a pause to allow the interviewee to elaborate.
- Words of encouragement were used to persuade interviewees to continue, drawing out more ideas. These were kept short and, again, followed by silence, allowing the interviewee to expand without interruption.
- Body language, like head-nodding, was added to the verbal techniques already described.
- Most interviews lasted between ten and fifteen minutes.
- The interviews were conducted among:
  - Twelve colleagues, including nine from a foundation centre in North East England, two admissions tutors from foundation programmes elsewhere, and one admissions tutor from an institution offering an extended (4 year) degree programme.
  - Five foundation centre students

- Eight prospective students during the course of pre-application engagement with a foundation centre in North East England.
- Responses were then transcribed from notes and audio recordings into a series of statements. Those statements, colour coded to indicate their origin (colleague; current student; potential student) were then cut so that each statement appeared on a separate slip of paper, and this sheaf of separate slips became the data pool. Included in this pool were, for example, *“An attitude that does not expect to be spoon-fed with answers”*, *“My motivation was the children – I want to inspire them”*, *“Almost anybody has the ability, if the circumstances are right, to get a degree.”*
- Using an iterative process as described by Newton and Newton (2009), the pool was sorted, then re-sorted into groups containing statements with something in common. This was achieved by spreading the statement slips on a large table, and physically sorting them into groups. When a new group became necessary because a statement did not fit into an existing group, statements already allocated were resorted, to see if the new group was more appropriate, and so on. The re-sorting process led to the evolution of groups that were “self-consistent and mutually exclusive” (Newton and Newton, 2009, p. 9). The groups were labelled and their characteristics listed. These groups, then, formed the *categories of description* described by Marton (1981).

Some criticism of this method has been expressed by researchers, particularly with regard to processes used to arrive at these categories of description. Two

approaches to this have been identified: discovery (in which the categories of description emerge during the data analysis), and construction (in which the data is subservient to a framework designed by the researcher). These approaches have been described by Walsh (2000), who also describes the possible tension between accurate use of data and adherence to a pre-determined framework that has been informed by a researcher's expectations. In my study, the phenomenographic survey, and subsequent iterative sorting of data and emergence of categories of description, was conducted before any other part of the investigation, including the literature review. Because of this, pre-conceptions were minimised, and the data pool itself was the driver for identifying the categories of description, following the discovery approach described above. The method has also been criticised because of the influence, either willing or unwilling, that the interviewer has on the process. Webb (1998) believes that failure to exclude the researcher's own experience, including knowledge and expectations, is a serious flaw. His arguments are strongly contested by Ekeblad (1997), who considers Webb's model of phenomenography to be intentionally narrow and inadequate. In any case, the phenomenographical survey conducted here forms only one part of a mixed-methods study, and other forms of data collection provide an element of triangulation which should serve to reassure as to the validity of these results. The small number of ambiguous statements in the pool were discussed with a researcher familiar with the method until 100% agreement about their categorisation was achieved. The Categories of Description that emerged from the sorting of the data pool informed the next stage, along with reflections on the literature review. These results will be presented in the next chapter.

### 3.2: Personal Attributes Survey

Using information gathered from the literature review and the phenomenographic approach, a set of characteristics which may identify potentially successful students was formulated. Conscientiousness, motivation, self-efficacy, resilience and grit were candidates, and means of identifying these characteristics were sought. These measures were then organised into a four-section survey, described below.

Students enrolling on courses at a foundation centre in North East England for the academic year 2014-2015 were invited to take part in the survey, which was conducted in a timetabled forty-minute session during their induction programme. 70 students agreed to participate. Of these:

- 21 were enrolled on Science, Technology, Engineering, Mathematics (STEM) courses.
- 41 were enrolled on Social Science (SS) courses
- 8 were enrolled on Arts / Humanities (A/H) courses
- 44 were Male; 26 were Female
- 20 were aged under 21
- 27 were aged between 21 and 24
- 23 were aged 25 or over

For Section 1, a simple test of conscientiousness was derived, in which participants were required to find some information overnight in order to provide answers to two questions when the survey was conducted on the next day.

Alongside these questions, participants were asked to respond to questions designed to gauge their engagement with pre-arrival activities. The nature of this test, which could be administered quickly and easily, was seen as important in finding potential instruments for the toolkit. Although this simple test may not measure the psychological construct of conscientiousness, on the face of it, it relates to that construct. McLachlan, Finn & Macnaughton, (2009) used similarly simple criteria to measure conscientiousness, and considered it an appropriate test. Section 1 of the survey also collected background information about age and progression route.

Section 2 aimed to identify students' motivations. For this, an adapted version of Neill's (2004) "The University Student Motivation and Satisfaction Questionnaire Version Two" was used. This questionnaire, containing thirty items, has been used by others conducting research into relationships between students' motivation and performance (Afzal et al., 2010). Mathias (2014) has extended the questionnaire to forty-eight items, and it is this extended version that was used here. The forty-eight items were grouped into seven categories, with the first category sub-divided into two. Each of these categories contained six questions. The categories were then divided into:

❖ **Intrinsic Motivation:**

- Self-exploration and Self-development (PV)
- Altruism (AT)

❖ **Extrinsic Motivation :**

- Instrumental Attraction (IN-AT)
- Instrumental Avoidance (IN-AV)

- Hedonism (HE)
- Self-image Attraction (SI-AT)
- Self-image Avoidance (SI-AV)

Responses to these forty-eight items were gathered using a five point Likert-type scale: 1 Strongly Disagree, 2 Disagree, 3 Neither Agree nor Disagree, 4 Agree, 5 Strongly Agree.

A forty-ninth item was added in the form of an open-ended question, allowing participants to add a comment about any motivation that they felt had not been covered in the questionnaire.

Section 3 contained two parts. First was the General Self-Efficacy questionnaire, which measures someone's level of confidence in his or her ability to cope in stressful or challenging situations (Luszczynska, Gutiérrez-Doña & Schwarzer, 2005). This test, found to be reliable and comprising a ten-item questionnaire, has been used in many studies (e.g. Schwarzer et al., 1997; Scholz, 2002).

Responses to the ten items were gathered using a five-point Likert scale as above.

The second part of Section Three comprised the Personal Resilience Questionnaire (PRQ). Cited in Wang (2009, p. 30) as reliable and "the only comprehensive instrument available to measure resilience characteristics", this is based on the Organisational Development Resources (ODR) Personal Resilience Framework, and has been tested for validity and reliability (Bryant, 1995). The PRQ uses seven subscales of resilience:

- Positive (World)
- Positive (Self)

- Focused
- Flexible (Thoughts)
- Flexible (Social)
- Organised
- Proactive

Responses to the questionnaire items used a five-point Likert scale as above, with higher scores indicating stronger resilience.

Section 4 of the survey sought to determine a respondent's perseverance, using the Short Grit Scale developed and validated by Duckworth and Quinn (2009). Defined by Duckworth as "perseverance and passion for long-term goals" (Duckworth et al, 2007, p.1087), grit is claimed to provide a predictive measure of success in a range of fields, including undergraduate study, performance at The US military Academy, and in the American National Spelling Bee. The eight-point questionnaire elicits responses to eight statements as being:

- Very much like me
- Mostly like me
- Somewhat like me
- Not much like me
- Not like me at all

For half of the questions, scores were inverted, so as to avoid repetitive responses.

For items one, three, five and six, scores were allotted thus:

*1 very much like me, 2 mostly like me, 3 somewhat like me, 4 not much like me, 5 not like me at all.*



For items two, four, seven and eight, scores were allotted thus:

*5 very much like me, 4 mostly like me, 3 somewhat like me, 2 not much like me, 1 not like me at all.*

The mean scores from these responses were then calculated, producing a maximum score of five (extremely gritty) and a minimum score of one (not at all gritty).

A cover page was added to the survey, providing information about ethics and seeking formal consent from the participant. A copy of the document is available in Appendix 1. Permission for the survey was sought, and obtained, from the appropriate ethics committee (See appendix 2).

A colleague, conducting other research, administered the NEO Personality Inventory test for the Big Five personality characteristics of extraversion, neuroticism, agreeableness, conscientiousness and openness to experience (Costa & McCrae, 1992), also during the induction programme and to the same sample group. It was agreed that the results could be shared. This established, widely accepted test has been used as a benchmark in establishing validity in other personality tests and was seen as a possible means of providing some triangulation for the simple test of conscientiousness devised for part one of the survey.

Data collected in the survey were tabulated using an Excel spreadsheet for statistical analysis and comparison with measures of each student's success on the programme.

### **3.3: Measures of success**

Success on the programme was measured using the Average Weighted Mean (AWM) of a student's scores in the summative assessments completed in the course of the foundation year. This is The Foundation Centre's measure of student success and is used to determine their progression (or not) to undergraduate studies. Calculation of this value is based on the following:

The required number of credits for a student to complete the programme is 120.

If a student took 12 modules, each worth 10 credits, the mean could be calculated simply by adding up all the scores and dividing by 12. The AWM allows for the fact that some modules are worth 10 credits, some 20 credits and some 30 credits. The most obvious way to do this calculation is to take each module mark and multiply by 10, 20 or 30, as appropriate, add them up and divide by 120.

Scores for individual modules were also recorded and subjected to statistical analysis against the survey data.

Results from the first teaching block (TB1), published in January, were used as interim measures of success to allow testing of the procedure in preparation for end-of-year results.

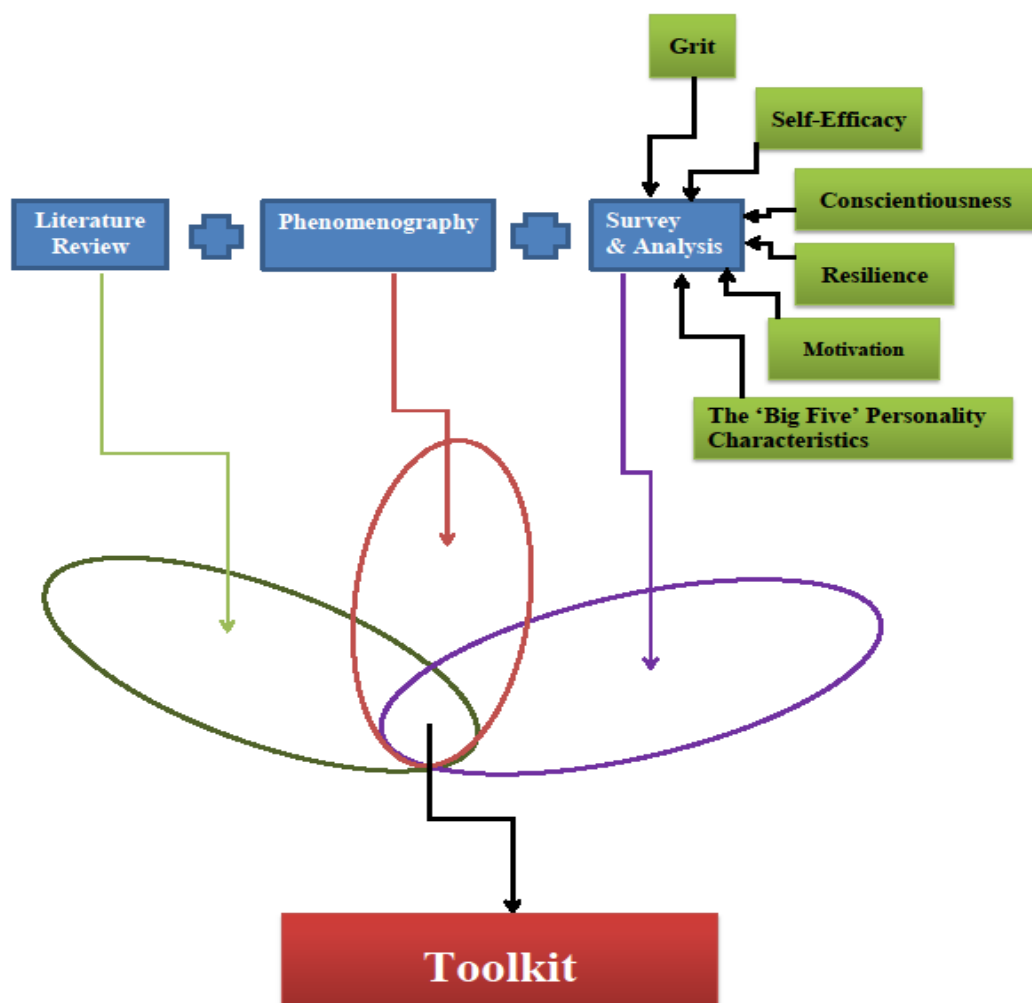
### **3.4: Statistical Analysis**

Survey data were analysed against measures of success using Pearson Correlation, comparing results with a table of critical values. The purpose of this was to identify relationships between variables, (see, for example, Agresti & Finlay, 2014, pp 270 -276). For this analysis, the data was transferred to the SPSS software package for processing.

## Chapter Four: Results

This chapter describes the results of the data collection in three areas: a literature review, a phenomenographical survey and a personal attributes survey.

The research in these three areas is designed to complete the three sections of the idealised schematic shown in Figure 4.1, in order that suitable measures of factors shown to be of importance in predicting successful outcomes for students applying for foundation programmes might be drawn together into a toolkit.



**Figure 4.1: Idealised Schematic of Possible Contributors to a Toolkit**

## 4.1: From the Literature review

The review of literature relating to characteristics which may be linked to successful outcomes for students suggested that the characteristics most likely to be needed were:

- Conscientiousness
- Hardiness, also referred to as perseverance or “grit”
- Self-Efficacy
- Motivation, in various forms
- Resilience

## 4.2: From the Phenomenographic studies

Statements transcribed from interviews with colleagues (n=39) are shown in **Table 4.1:**

<b>Table 4.1: Statements by Colleagues:</b>
The first thing is motivation. If they have the motivation and desire they can overcome a lot of the hurdles.
Some subjects have bigger hurdles.
They need correct perceptions of what the course entails from the start.
Strong motivation in the first place.
They are looking to commit 4 years of time and money.
An understanding of what they are getting into.
Some kind of potential.
Independence; the strength of character to resist potentially negative influences and stand alone.
Interest in the subject is one of the major things – can be used to push them through.
Intrinsic passion.
Almost anybody has the ability, if the circumstances are right, to get a degree.
Being a student here has a lot of cultural capital out there in the world, so built-in motivation which may explain the programme’s success.
Intrinsic ability is not that important.
Ability for independent thought.
An understanding that nothing is going to be easy.
An attitude that does not expect to be spoon-fed with answers.
Have a hard-work attitude.

The better students are less reliant on the teacher.
Common to all programmes is a clear motivation; they have thought it through and something has led them here.
Some reflection of where things were before and how it is different now.
Awareness of what it's about. Have they spoken to people who have done something similar?
An "I want more" attitude that comes from reflection.
Motivation plays an important role.
Can see a very clear reason for wanting that degree.
Invested a lot in going for the degree (financial, personal, family).
Sensible time management.
Have addressed what went wrong before.
Like panning for gold, we should take everyone then deal with the problems.
Getting the right staff is key to the students' success.
We just don't know.
It is less about their qualities and more about firing something in them that makes them want to succeed.
The Subject is the fab part of being a student.
They need enthusiasm for the subject.
Passion about the subject more important than career, or what they might do with the subject.
Readiness – are they ready for university? Some may benefit from a short course to dip their toe in the water.
The big difference is determination – to do what is asked and carry on when there is a difficulty.
Persistence got me through.
Realistic expectations of the whole process – the course, themselves, and what HE will do for them.
Understanding it as a process, including demands as well as joys.

Statements transcribed from interviews with current students (n=17) appear in **Table 4.2:**

<b>Table 4.2: Statements by Current Students</b>
The student's will and how much they want it.
How much they put into it – putting the time in and the effort.
Maturity – there's definitely a difference – coming back again and knowing it's really what you want.
It's the want.
My motivation was the children – I want to inspire them.
It's a kind of mind-set really. Whatever else is going on in their life, they still need to be able to get on with the study.
You've got to be engaged with what you've got to learn – it's completely about

that.
We've been moulded by our lives, as mature students. We come in with different experiences to the younger ones.
Life experience and work experience.
The need to succeed – this is for me.
Motivation.
Awareness of what you are going to experience.
When I want something I am like a dog with a bone.
You need to be really organised – that's the number one thing.
Reading skills – things like that.
Having a higher IQ – when someone is smarter by nature.
It's the ultimate goal at the end that drives you. It makes you more focused.

The third set of statements were transcribed from interviews with potential students; those at the pre-application stage seeking information, advice and guidance. These statements (n=24) appear in **Table 4.3**:

<b>Table 4.3: Statements by Potential Students</b>
Determination is the most important thing.
Should be excited by the course.
The ability to study independently
Motivation
Confidence and self-esteem
Dedication
Flexibility and the ability to change ways of thinking.
Being able to overcome challenges.
It is like a hill with no way round – so you have to go over it; you have to find a solution.
Self motivation
Organisational skills are very important.
You have to have an interest in the subject.
You have to be keen to learn and have an interest in the subject
Be able to work to deadlines.
If you are not interested in learning you are not going to push the boundaries in order to get better qualifications.
If you are interested in the subject you will go to further lengths to get the best out of what you are doing.
You'd have to be determined – to stick in.
Need to be hard-working and stubborn.
The ability to ask for help when you need it.

Don't be afraid of failure – do it anyway.
Independence – self learner.
Sticking at it until it's done.
Helping others – being part of a group – teamwork – helping each other.
Willpower to learn.
Need to be hard-working and stubborn.

The categories of description that emerged from the iterative sorting of these statements were:

1. Motivation.

Defined as the process whereby goal-directed activities are initiated and sustained (Schunk, Meece & Pintrich, 2014, p. 5), motivation is the driving force behind any activity, including academic study. For example: “Can see a very clear reason for wanting that degree”

2. Learning Processes and Skills.

Here are included the mechanics of learning and the skills needed to accomplish that learning, including both cognitive skills, such as numeracy and literacy, and a wide range of other skills, from time-management to co-operation. For example: “Organisational skills are very important”

3. Broad Perceptions of the Educational Process - and Readiness for it.

Realistic expectations of the process of education, both in terms of input (what a student needs to put in to the process) and output (what the student can expect to get from the process). For example: “Awareness of what it's about. Have they spoken to people who have done something similar?”

4. Making up the Deficits – an ideological view of support.

Is it possible to remediate for any perceived deficiencies which might impede a student's ability to succeed? For example: "Getting the right staff is key to the students' success."

## 5. Personality and Values.

Personal traits, characteristics and attitudes are included here. These noncognitive attributes and acquired tendencies may make a significant difference to how a student performs. For example: "It is like a hill with no way round – so you have to go over it; you have to find a solution."

A few of the statements fit appropriately into more than one category.

**Table 4.4** shows the statements categorised as pertaining to motivation.

Colleague statements are in black, current student statements in red and potential student statements in blue.

<b>Table 4.4: Motivation</b>
Interest in the subject is one of the major things – can be used to push them through.
The Subject is the fab part of being a student.
Intrinsic passion.
Passion about the subject more important than career, or what they might do with the subject.
They need enthusiasm for the subject.
They are looking to commit 4 years of time and money.
Should be excited by the course.
Invested a lot in going for the degree (financial, personal, family).
Motivation plays an important role.
Being a student here has a lot of cultural capital out there in the world, so built-in motivation which may explain the programme's success.



Common to all programmes is a clear motivation; they have thought it through and something has led them here.
It is less about their qualities and more about firing something in them that makes them want to succeed.
The first thing is motivation. If they have the motivation and desire, they can overcome a lot of the hurdles.
Strong motivation in the first place.
Can see a very clear reason for wanting that degree.
You have to have an interest in the subject.
Motivation.
If you are interested in the subject, you will go to further lengths to get the best out of what you are doing.
Should be excited by the course.
Self motivation.
If you are not interested in learning, you are not going to push the boundaries in order to get better qualifications.
You have to be keen to learn and have an interest in the subject
The student's will and how much they want it.
It's the want.
You've got to be engaged with what you've got to learn – it's completely about that.
It's the ultimate goal at the end that drives you. It makes you more focused.
Motivation.
The need to succeed – this is for me.
My motivation was the children – I want to inspire them.

Sixteen of the thirty-nine (41%) statements by colleagues, seven of the seventeen (41%) statements by current students and seven of the twenty-four (29%) statements by prospective students have a theme related to motivation. The thirty statements that relate to this theme represent 37.5% of the total number of statements from all three groups, making motivation the largest of the five categories of description.

The statements relating to Learning Processes and Skills appear in **Table 4.5**, with colour coding as before:

<b>Table 4.5: Learning Processes and Skills</b>
An attitude that does not expect to be spoon-fed with answers.
The better students are less reliant on the teacher.
Sensible time management.
Understanding it as a process, including demands as well as joys.
Organisational skills are very important.
Be able to work to deadlines.
The ability to ask for help when you need it.
Helping others – being part of a group – teamwork – helping each other.
Reading skills – things like that.

**Table 4.6** displays the statements in the category Broad Perceptions of the Educational Process – and Readiness for it:

This category comprises around 16% of the total statements, but only one is not by a colleague; nearly 31% of colleagues’ statements are included here.

<b>Table 4.6: Broad Perceptions of the Educational Process - and Readiness</b>
Some subjects have bigger hurdles.
They need correct perceptions of what the course entails from the start.
They are looking to commit 4 years of time and money.
An understanding of what they are getting into.
Being a student here has a lot of cultural capital out there in the world, so built-in motivation which may explain the programme’s success.
An understanding that nothing is going to be easy.
Some reflection of where things were before and how it is different now.
Awareness of what it’s about. Have they spoken to people who have done something similar?
An ‘I want more’ attitude that comes from reflection.
Have addressed what went wrong before.
Readiness – are they ready for university? Some may benefit from a short course to dip their toe in the water.
Realistic expectations of the whole process – the course, themselves, and what HE will do for them.
Awareness of what you are going to experience.

Here we have just 11.25% of the statements collected. Only one statement is from current students, with the remaining eight statements evenly distributed between the other groups.

Statements included in the category “Making up the Deficits – an ideological view of support” are presented in **Table 4.7**:

<b>Table 4.7: Making up the Deficits</b>
Intrinsic ability is not that important.
Like panning for gold, we should take everyone then deal with the problems.
Getting the right staff is key to the students’ success.
It is less about their qualities and more about firing something in them that makes them want to succeed.
Almost anybody has the ability, if the circumstances are right, to get a degree.

This category is comprised entirely of statements by colleagues and represents 13% of their statements. Only 6% of the whole dataset is represented here.

**Table 4.8** shows the statements included in the final category, “Personality and Values”:

<b>Table 4.8: Personality and Values</b>
Independence; the strength of character to resist potentially negative influences and stand alone.
Have a hard-work attitude.
The big difference is determination – to do what is asked and carry on when there is a difficulty.
An ‘I want more’ attitude that comes from reflection.
Ability for independent thought.
Persistence got me through.
An attitude that does not expect to be spoon-fed with answers.
When I want something I am like a dog with a bone.
The student’s will and how much they want it.
It’s the want.
It’s a kind of mind-set really. Whatever else is going on in their life, they still need to be able to get on with the study.
Having a higher IQ – when someone is smarter by nature.
You need to be really organised – that’s the number one thing.

We've been moulded by our lives, as mature students. We come in with different experiences to the younger ones.
How much they put into it – putting the time in and the effort.
Confidence and self-esteem
It is like a hill with no way round – so you have to go over it; you have to find a solution.
The ability to study independently
Sticking at it until it's done.
Flexibility and the ability to change ways of thinking.
Need to be hard-working and stubborn
You'd have to be determined – to stick in.
Determination is the most important thing.
Don't be afraid of failure – do it anyway.
Independence – self learner.
Willpower to learn.
Dedication
Being able to overcome challenges.

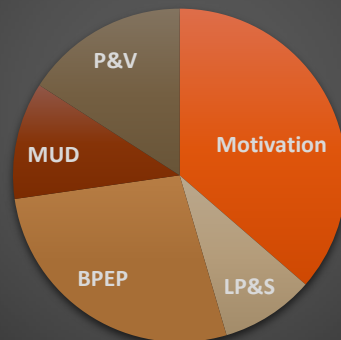
This category comprises twenty-eight statements (35% of the total dataset), making it the second largest of the categories. Potential students contributed the most statements, with thirteen of their twenty-four (54%) being categorised here. Current students contributed eight statements (47% of their total), and 18% of colleagues' thirty-nine statements (7) have been assigned to this category.

#### 4.3: Statement Distribution

The distribution of statements from the three groups of respondents in the five categories of description is displayed graphically in the charts below.

**Figure 4.2** shows the distribution of statements from colleagues:

**Figure 4.2: Distribution of  
Colleague Statements**



**Key:**

LP&S: Learning Processes & Skills

BPEP: Broad Perceptions of the Educational Process – & readiness for it.

MUD: Making Up the Deficits – an ideological view of support.

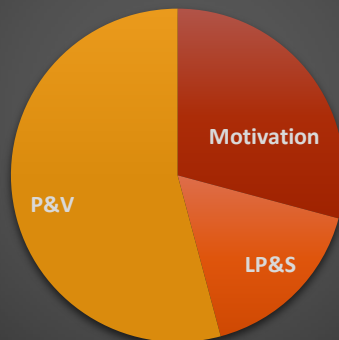
P&V: Personality & Values

Colleagues have given motivation the largest slice, with sixteen of the thirty-nine statements, followed by Broad Perceptions of the Educational Process, with twelve statements. Personality and Values is third, with seven statements, leaving Making up the Deficits with five and Learning Processes and Skills with four statements.

It is notable that the category Making up the Deficits is applied only to the statements transcribed from interviews with colleagues; neither of the student groups interviewed made statements appropriate to this category of description.

The distribution of statements transcribed from potential students appears in **Figure 4.3:**

**Figure 4.3: Distribution of Potential Students' Statements**



**Key:**

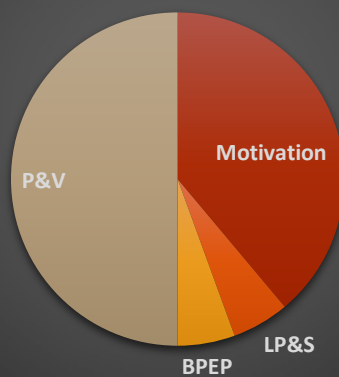
LP&S: Learning Processes & Skills

P&V: Personality & Values

Here, only three of the categories of description are represented, and Personality and Values has the largest portion by a significant margin, with thirteen of the twenty-four statements (54%) allocated. Motivation is next, with seven statements (29%), and Learning Processes and Skills has four statements (16%).

The distribution of current students' statements is shown in **Figure 4.4:**

**Figure 4.4: Distribution of Current Students' Statements**



**Key:**

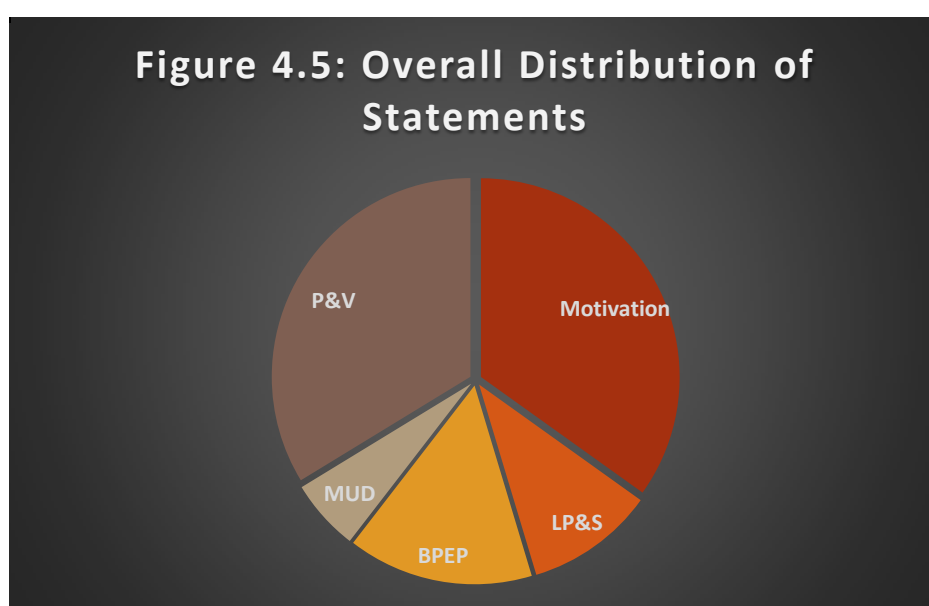
LP&S: Learning Processes & Skills

BPEP: Broad Perceptions of the Educational Process – & readiness for it.

P&V: Personality & Values

This group also places the greatest emphasis on Personality and Values; nine of their seventeen statements (47%) are allocated to this category. Motivation is also a strong category here, with seven statements (41%). Broad Perceptions of the Educational Process and Learning Processes and Skills have one statement each.

Combining the statements of the whole dataset, the distribution between the five categories of description is displayed in the chart, **Figure 4.5:**



**Key:**

LP&S: Learning Processes & Skills

BPEP: Broad Perceptions of the Educational Process – & readiness for it.

MUD: Making Up the Deficits – an ideological view of support.

P&V: Personality & Values

The strongest categories, Motivation (35%) and Personality & Values (34%), are closely balanced and lead the other categories by a wide margin. Broad Perceptions of the Educational Process has 15% of the statements, Learning Processes and Skills 10% and Making up the Deficits 6%.

#### 4.4: PERSONAL ATTRIBUTES SURVEY

Data collected in the Personal Attributes survey is described in the various categories as suggested by the survey: Motivation, Self-Efficacy, Resilience, Conscientiousness, Grit, and the NEO Personality Inventory.



Table 4.9: Motivation				
P.V	S.V	I.A.	Hed.	S.I.
5.000	5.000	4.083	4.833	3.333
4.583	4.167	3.500	4.833	3.083
5.000	5.000	4.167	4.667	2.250
4.333	4.000	3.583	4.667	3.500
3.833	3.333	3.333	4.333	3.583
4.583	4.167	4.167	4.167	2.750
5.000	4.000	4.083	4.167	3.417
4.250	4.667	3.667	4.167	2.833
4.917	5.000	3.583	4.167	3.417
4.417	4.000	3.417	4.167	3.833
4.917	4.333	4.167	3.833	3.167
5.000	5.000	4.083	3.833	3.083
5.000	4.167	4.000	3.833	4.417
4.417	5.000	3.917	3.833	2.583
3.500	3.000	3.833	3.833	3.250
4.917	4.833	3.833	3.833	3.167
3.667	3.000	3.500	3.833	1.667
4.583	4.833	3.417	3.833	3.833
3.833	3.333	3.333	3.833	3.333
4.333	3.667	4.000	3.667	2.083
4.250	4.333	3.833	3.667	3.167
3.250	1.667	3.667	3.667	3.917
4.250	3.000	4.250	3.500	2.250
4.667	5.000	4.083	3.500	2.750
4.583	4.833	3.833	3.500	3.250
4.917	4.833	3.583	3.500	2.583
4.167	3.333	3.417	3.500	2.333
4.250	3.333	3.417	3.500	3.917
3.750	1.000	4.917	3.333	1.333
4.250	3.500	4.750	3.333	2.000
4.583	3.667	4.250	3.333	2.250
4.583	3.000	4.167	3.333	1.500
4.333	3.500	4.083	3.333	1.167
4.500	3.500	3.917	3.333	2.250
4.667	3.333	3.750	3.333	2.083
3.667	3.500	3.500	3.333	2.667
4.083	1.167	2.333	3.333	1.833
4.667	4.000	4.750	3.167	1.833
4.750	4.333	4.500	3.167	1.833
4.833	3.333	3.333	3.167	4.333
5.000	4.167	4.667	3.000	1.500
3.333	3.000	3.833	3.000	2.750
3.833	4.000	3.667	3.000	2.667
3.833	3.833	3.583	3.000	2.833
3.750	3.500	3.417	3.000	3.083
4.167	2.500	4.750	2.833	1.750
4.833	4.833	4.750	2.833	2.667
4.083	4.000	4.333	2.833	1.250
4.333	3.667	3.833	2.833	1.250
3.417	1.333	3.583	2.833	1.667
4.250	4.667	3.167	2.833	1.417
3.750	1.000	3.083	2.833	1.750
4.500	4.500	3.000	2.833	1.417
3.333	3.000	4.583	2.667	1.667
4.583	2.167	4.333	2.667	2.167
4.500	4.333	4.167	2.667	1.167
4.333	4.167	4.000	2.667	1.583
4.917	4.833	4.000	2.667	1.333
3.750	2.500	3.917	2.667	2.667
4.250	5.000	3.833	2.667	3.000
3.917	3.167	3.417	2.667	2.083
3.917	2.333	4.000	2.500	1.333
4.083	3.000	3.750	2.500	1.750
4.667	4.500	4.750	2.333	1.833
4.750	3.833	4.333	2.167	1.667
4.917	3.333	2.500	2.167	2.667
4.583	3.667	4.750	2.000	1.000
3.833	4.000	4.250	2.000	1.750
3.583	3.500	3.917	2.000	2.167
4.750	4.833	4.250	1.500	1.083
4.326	3.712	3.892	3.262	2.411

TABLE 4.9:  
MOTIVATION

- P.V = Personal Values
- S.V = Social Values
- I.A. = Instrumental Attraction
- Hed. = Hedonism
- S.I. Self-Image

The table shows the individual scores for the motivation questions contained in the survey.

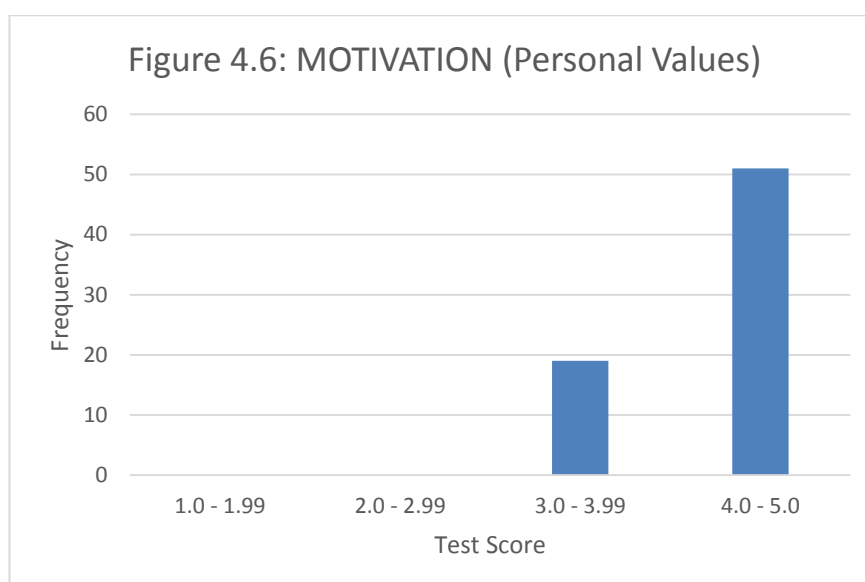
Mean scores are shown in red at the bottom of each column.

**Table 4.9** shows the individual scores for the motivation questions contained in the personal attributes survey. The scores are separated into five categories of motivation:

- Personal values
- Social Values
- Instrumental Attraction
- Hedonism
- Self-image

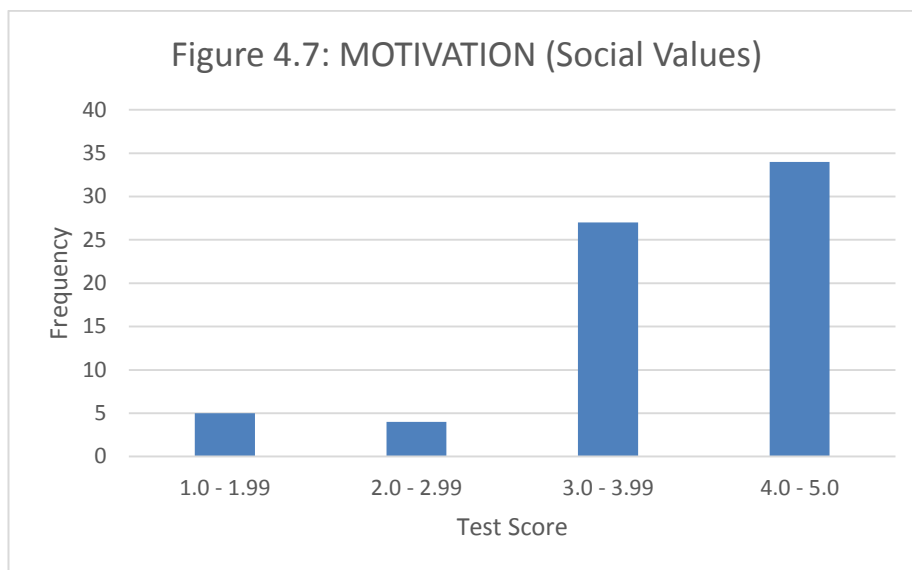
For each category the minimum value is 1.00 and the maximum value is 5.00

For the category Personal values, the mean is 4.33, the highest mean of any of the categories of motivation, with six respondents returning the maximum score, 5.00 The lowest score in this category is 3.25, giving us a range of 1.75. **Figure 4.6** shows this as a frequency bar chart, giving a clear view of how the data is grouped:

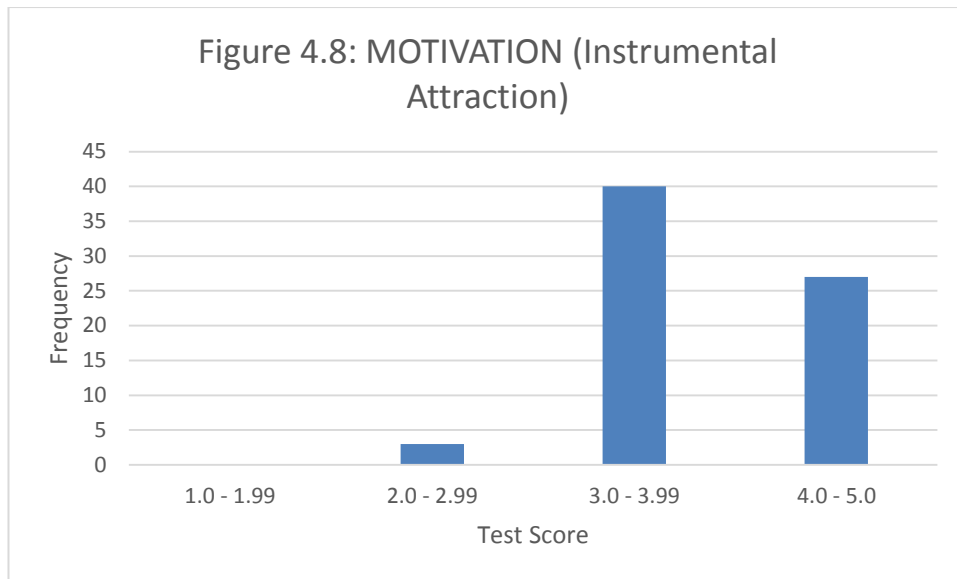


Clearly, respondents rated the questions in this category as relating strongly to their reasons for attending university, with 73% scoring above 4.00.

The second motivation category is Social Values. Here, the mean is 3.71 and, although this is a lower mean than for Personal Values, a full 10% of the sample returned the maximum score, 5.00. The lowest score is 1.00, giving a range for this category of 4.00. **Figure 4.7** shows the frequency of these scores, making it clear that the trend is again towards the higher scores, with 87% of scores falling between 3.00 and 5.00.

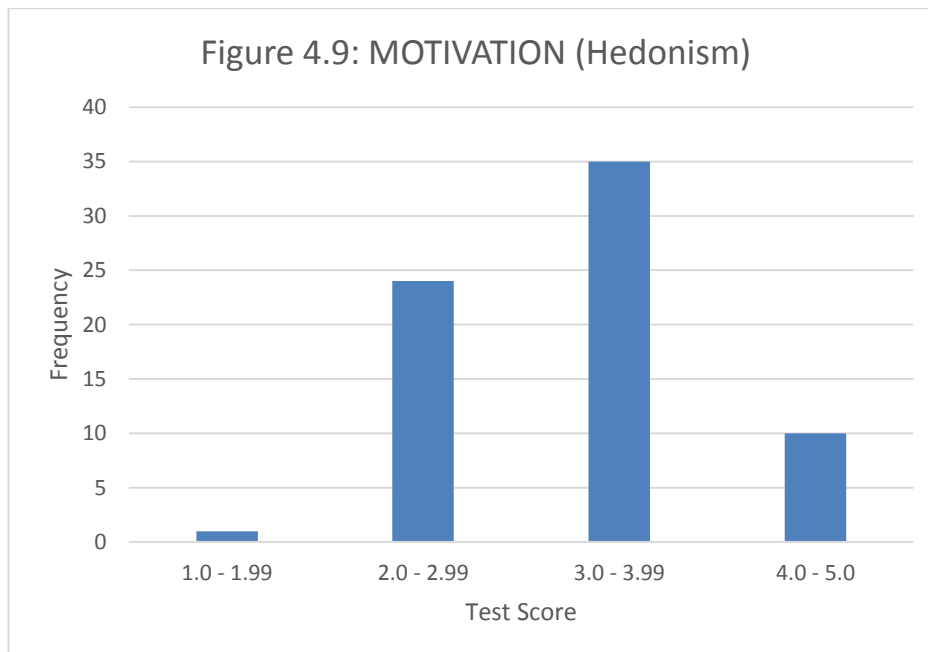


The motivation category Instrumental Attraction has a mean score of 3.89. Here, none of the respondents returned a maximum, 5.00, the highest score being 4.92. The lowest score in this category is 2.33, giving a range of 2.58. The frequency bar chart, **Figure 4.8**, shows the spread of these scores:



In this category of motivation, then, all but two of the scores are between 3.00 and 5.00.

Moving now to the fourth category of motivation, Hedonism, the table shows that the mean value is 3.26. Again, none of the respondents scored a maximum, 5.00. The highest value is 4.83 and the lowest value is 1.50, so we have a range of 3.33. The spread of values for this category is shown in **Figure 4.9**:



In this motivation category the scores are more evenly distributed than in the previous three categories, with 36% of the sample scoring 2.99 or lower, 14% of

the sample scoring higher than four, and the remaining 50% scoring between 3.00 and 3.99.

The last of the Motivation categories is Self-Image. In this column of Figure 2, we see that the mean score is 2.41. Highest score is 4.42 and lowest is 1.00, giving us a range of 3.42. The frequency bar chart, **Figure 4.10**, shows how these scores are distributed for the sample. Of all the Motivation categories, this has the most even distribution, with 37% of the sample scoring below 1.99, 33% scoring between 2.00 and 2.99, and 30% scoring above 3.00.



**Table 4.10** shows the individual scores for the Resilience questions contained in the personal attributes survey. The scores are separated into seven categories of resilience:

- Positive World View
- Positive Self-Concept
- Focused Sense of Purpose
- Flexible Thinking
- Social Flexibility
- Organising Ambiguity
- Proactiveness

For each category the minimum value is 1.00 and the maximum value is 5.00.

Table 4.10: Resilience						
Pos. W.V.	Pos. S.C.	F.S. of P.	Flex Think	Soc. Flex	Org. Amb.	Proact.
4.000	5.000	5.000	5.000	5.000	5.000	5.000
4.500	5.000	5.000	5.000	4.500	4.250	5.000
4.500	4.750	4.250	5.000	4.000	4.250	4.750
4.250	4.750	4.750	4.500	4.750	3.750	4.750
3.250	3.750	4.500	4.500	5.000	4.750	4.500
4.500	4.250	5.000	4.750	5.000	4.500	4.500
4.250	4.500	4.250	4.500	4.750	4.500	4.500
4.250	4.500	4.250	4.750	4.250	4.500	4.500
4.000	4.250	4.750	4.750	4.500	4.250	4.500
4.500	4.250	4.750	4.500	4.250	4.250	4.500
3.250	4.500	4.750	4.500	3.250	3.750	4.500
4.250	4.250	4.750	4.250	4.250	5.000	4.250
4.250	4.250	4.500	4.000	4.000	4.500	4.250
3.750	4.500	4.500	4.250	4.750	4.250	4.250
4.000	3.500	3.500	4.500	3.750	4.000	4.250
4.000	4.250	4.000	4.000	3.000	4.000	4.250
3.250	4.500	4.750	4.250	3.250	3.750	4.250
3.250	4.500	4.750	5.000	4.000	3.000	4.250
3.000	3.750	4.000	4.500	4.750	4.750	4.000
3.500	4.500	4.500	4.500	4.500	4.250	4.000
4.500	4.750	4.250	3.750	4.500	4.250	4.000
3.500	4.250	4.250	4.000	4.250	4.250	4.000
2.500	3.500	4.000	3.750	3.750	3.750	4.000
3.500	3.750	3.000	4.500	4.250	3.250	4.000
4.250	3.750	3.250	4.500	3.750	3.250	4.000
3.500	4.500	4.250	4.000	2.500	2.750	4.000
3.500	4.500	4.500	5.000	3.250	4.750	3.750
3.750	4.000	4.250	4.250	4.250	3.750	3.750
4.500	4.000	4.250	4.000	3.750	3.750	3.750
3.500	4.000	4.000	4.000	3.500	3.750	3.750
4.250	4.250	3.750	4.000	4.250	3.500	3.750
3.500	3.250	3.500	3.500	4.250	3.500	3.750
3.750	3.750	4.000	4.000	4.000	3.500	3.750
4.250	4.000	3.750	4.500	4.250	3.250	3.750
5.000	4.500	4.000	5.000	2.500	3.000	3.750
3.500	3.250	3.750	3.500	4.250	4.250	3.500
3.500	3.250	3.250	3.500	3.500	4.000	3.500
3.000	3.500	4.000	3.500	3.250	4.000	3.500
3.250	3.750	4.000	4.000	3.000	3.750	3.500
2.500	2.250	3.000	4.500	4.750	3.500	3.500
3.750	4.000	4.000	3.750	4.000	3.500	3.500
3.250	3.750	3.500	3.500	3.750	3.500	3.500
3.500	3.000	3.250	4.000	3.750	2.750	3.500
3.500	3.500	3.500	4.000	3.500	2.500	3.500
2.875	3.750	4.625	4.250	3.250	4.750	3.250
2.500	3.500	3.500	4.000	3.500	4.000	3.250
3.000	3.750	4.000	3.750	3.500	4.000	3.250
3.000	3.750	4.250	2.750	3.250	4.000	3.250
3.750	3.750	3.500	4.000	4.000	3.500	3.250
2.500	3.500	3.000	3.500	3.250	3.250	3.250
3.750	4.000	4.000	3.500	2.250	3.250	3.250
3.250	3.000	3.250	4.250	3.750	3.000	3.250
3.000	3.750	3.250	3.500	3.500	3.000	3.250
3.500	3.750	3.750	3.750	4.250	2.250	3.250
2.500	2.750	4.750	3.750	4.000	4.000	3.000
3.750	4.000	3.750	4.000	4.500	3.500	3.000
4.000	3.750	3.500	3.750	3.250	3.500	3.000
3.500	3.500	3.250	3.750	3.750	3.250	3.000
4.250	4.250	3.000	4.250	3.500	3.000	3.000
2.750	3.250	1.500	3.500	4.500	2.250	3.000
3.750	3.750	3.750	3.750	3.250	4.000	2.750
3.750	2.500	2.750	4.000	3.500	3.500	2.750
3.750	3.250	3.250	4.250	4.000	3.250	2.750
2.750	2.750	3.000	3.750	3.500	3.250	2.750
2.250	4.500	3.250	4.250	3.000	2.750	2.750
3.250	3.500	3.000	3.000	3.250	2.500	2.750
3.250	3.000	3.500	3.750	3.750	3.000	2.500
2.000	3.000	4.250	3.750	4.000	4.500	2.250
3.250	2.500	3.500	4.250	2.750	3.500	2.250
2.000	2.750	4.000	3.500	4.000	2.750	2.250
3.541	3.829	3.898	4.093	3.846	3.696	3.632

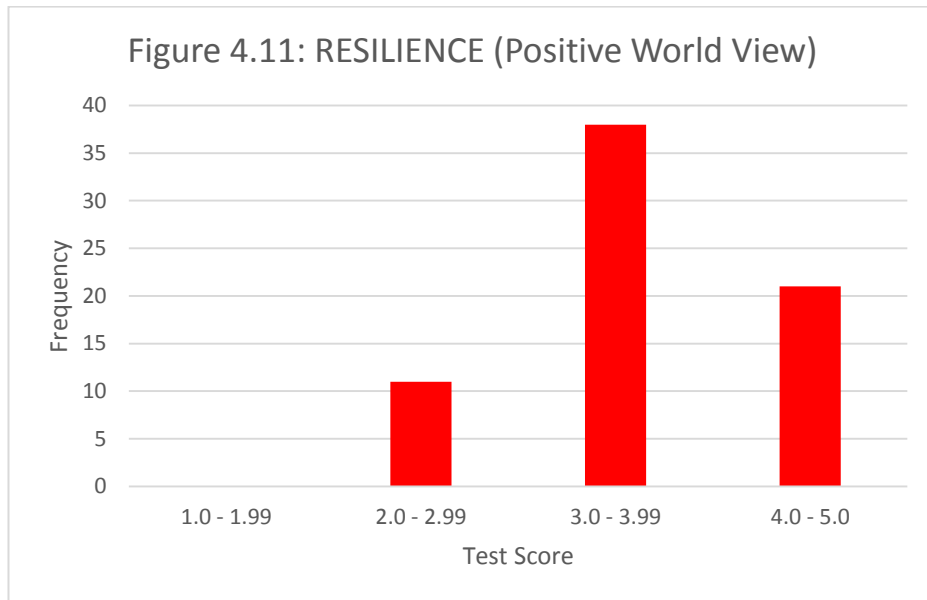
TABLE 4.10:  
RESILIENCE

- Pos. W.V. = Positive World View
- Pos. S.C. = Positive Self-Concept
- F.S. of P. = Focused Sense of Purpose
- Flex Think = Flexible Thinking
- Soc. Flex = Social Flexibility
- Org. Amb. = Organising Ambiguity
- Proact. = Proactiveness

The table shows the individual scores for the resilience questions contained in the survey.

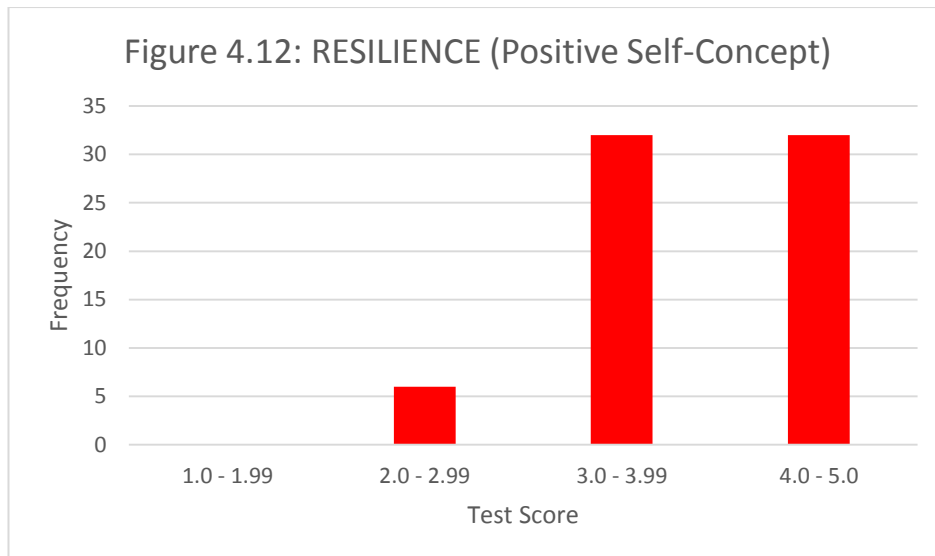
Mean scores are shown in blue at the bottom of each column.

For the resilience category Positive World View, the mean score is 3.54, the lowest mean score among the resilience categories. Only one respondent scored the maximum, 5.00, and the lowest score was 2.00, giving a range of 3.00. The frequency bar chart, **Figure 4.11**, shows the distribution of these scores:



For the resilience category Positive Self-Concept, the mean score is 3.83. Two respondents scored the maximum, 5.00, and the lowest score was 2.25, producing a range of 2.75. The distribution of the scores can be seen in the chart, **Figure 4.12**:

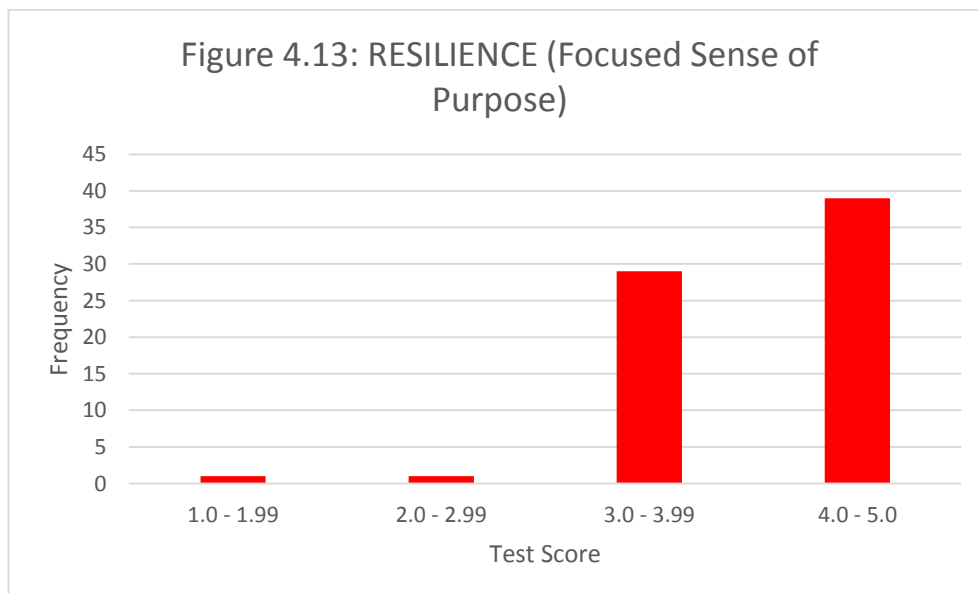




Here we can see that a large proportion of respondents' scores, 91.4%, lie between 3.00 and 5.00, with only six respondents recording a score below 3.00.

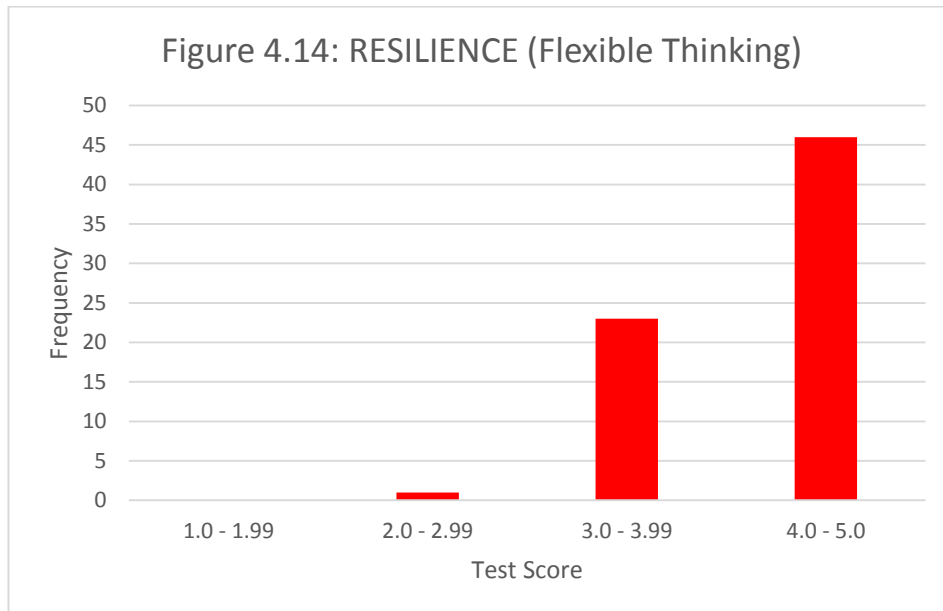
Resilience category Focused Sense of Purpose has a mean score of 3.90. Three of the respondents scored the maximum, 5.00, and the lowest score was 1.50, giving a range for this category of 3.50. The distribution of these scores is shown in

**Figure 4.13:**



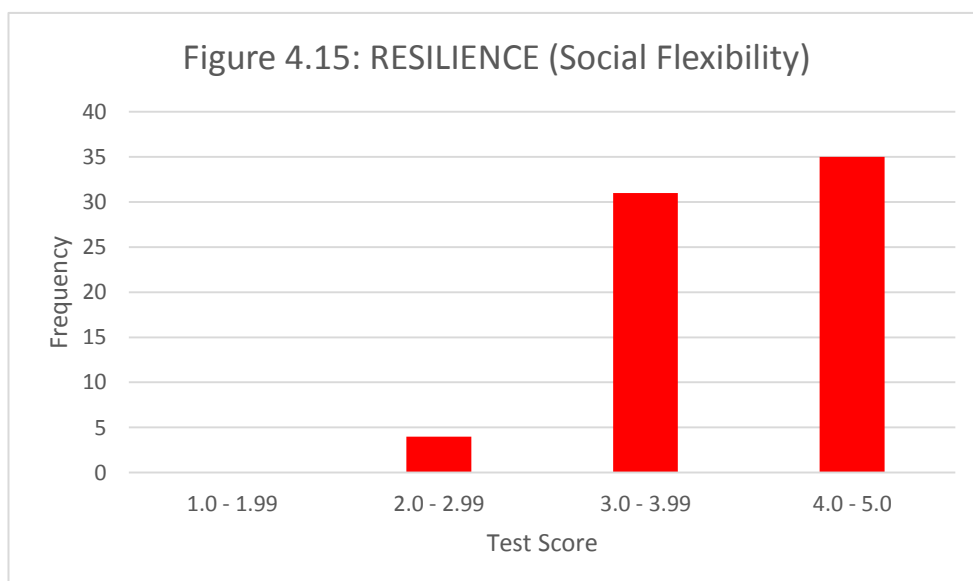
Once again, we can see from the plot that the scores are largely between 3.00 and 5.00, with only two of the seventy recorded scores outside of that range. The large majority of the scores are distributed between these two values.

Flexible Thinking has a mean score of 4.09, the highest among the resilience categories. Here, six respondents have returned a maximum score, 5.00, and the lowest score is 2.75, giving a range of 2.25. **Figure 4.14** shows how the scores are distributed.



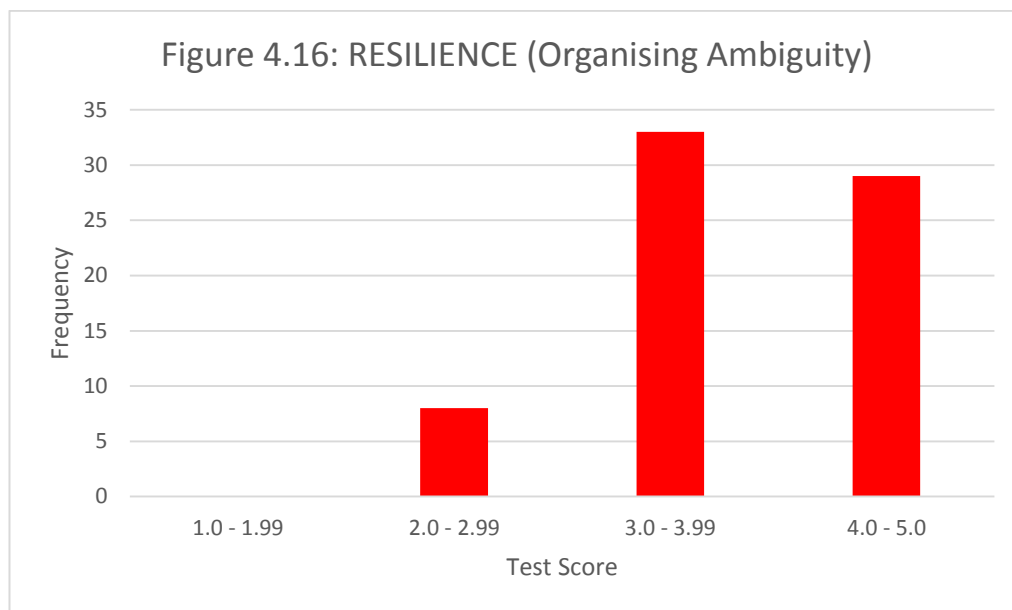
This set of scores has only one value lying outside the 3.00 – 5.00 range, within which there is tendency towards the higher scores.

Resilience category Social Flexibility has a mean score of 3.85. Three respondents scored the maximum, 5.00, and the lowest score was 2.25, resulting in a range of 2.75. The distribution of the scores is shown in **Figure 4.15**:



Here, also, the large majority of the scores (94%) lie between 3.00 and 5.00, with just four scores below this range.

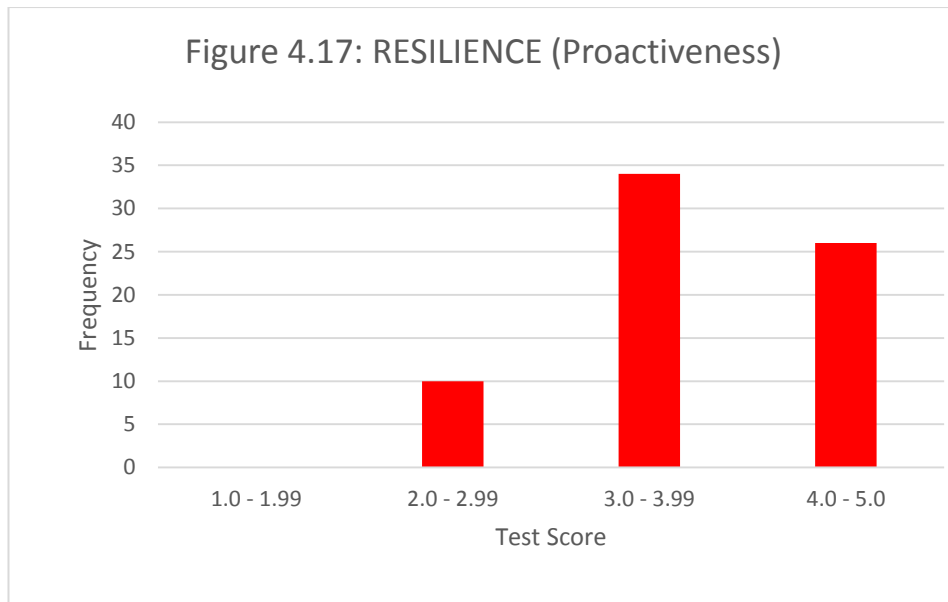
Organising Ambiguity, the next of the resilience categories, has a mean score of 3.69. Two of the respondents scored the maximum, 5.00, and the lowest score recorded was 2.25, so that the range is, once again, 2.75. The distribution of scores is shown in the frequency bar chart, **Figure 4.16:**



From this chart we can see that only 11% of scores lie outside of the range 3.00 – 5.00.

The last of the resilience categories is Proactiveness. Here the mean score is 3.63.

Two respondents returned maximum scores at 5.00, and the lowest score was 2.25, giving us a range of 2.75 as in the previous two categories. **Figure 4.17** shows the distribution of the scores:



In this category, there is slightly less concentration of scores between 3.00 and 5.00, with ten scores (14%) falling below that range.

**Table 4.11** shows the individual scores for the Grit, Conscientiousness (practical) and Self-efficacy questions in the Personal Attributes questionnaire. The Grit scale is from 1.00(not gritty at all) to 5.00 (extremely gritty). Conscientiousness (practical) differs from other parts of the questionnaire, because it is possible to score zero by not completing any of the allotted tasks. Maximum score is 7.00. Self-Efficacy is measured on a scale of 1.00 -5.00

Grit	Consc.	Self Eff.
4.625	4.000	4.300
4.250	3.000	4.400
3.375	0.000	5.000
2.500	2.000	4.000
3.125	2.000	3.500
2.250	3.000	3.500
3.750	3.000	4.300
4.750	2.000	4.000
2.625	4.000	3.200
2.875	2.000	4.500
3.125	2.000	3.900
4.000	6.000	5.000
4.000	2.000	4.200
4.250	6.000	3.100
4.250	0.000	3.600
2.750	2.000	3.600
2.125	2.000	4.500
4.375	2.000	4.300
3.250	2.000	3.100
2.750	2.000	2.800
3.125	1.000	3.800
2.750	2.000	4.300
2.250	1.000	3.900
2.625	2.000	3.100
2.375	4.000	3.100
3.625	6.000	3.900
2.625	0.000	3.600
3.000	5.000	3.900
3.625	3.000	4.300
3.750	0.000	4.100
4.250	6.000	4.500
3.000	2.000	3.500
3.625	4.000	3.000
3.000	4.000	3.600
2.875	7.000	3.600
3.250	0.000	4.000
2.875	3.000	3.300
2.750	0.000	3.900
3.375	2.000	4.500
3.750	2.000	2.900
3.625	1.000	4.900
3.125	4.000	3.600
3.875	0.000	4.700
2.625	2.000	3.900
4.250	3.000	4.200
3.375	2.000	4.000
4.625	2.000	4.600
3.000	2.000	3.100
2.375	2.000	3.200
3.750	2.000	3.400
2.875	2.000	3.900
3.875	2.000	3.600
3.500	4.000	4.200
3.750	0.000	4.300
3.125	0.000	3.600
3.875	3.000	3.700
4.125	2.000	4.300
3.500	3.000	3.600
3.625	2.000	4.100
4.125	2.000	4.300
2.875	2.000	4.000
2.875	2.000	2.000
2.500	2.000	2.800
1.625	0.000	3.000
4.000	2.000	3.900
3.125	1.000	3.400
4.570	2.000	4.400
4.125	4.000	4.500
3.625	2.000	3.600
3.625	4.000	3.400
3.364	2.371	3.826

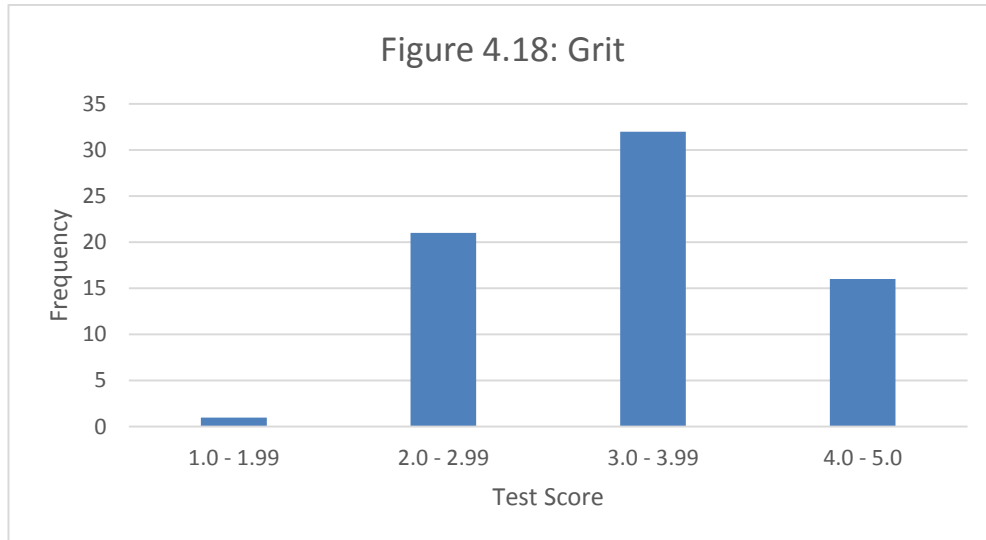
TABLE 4.11: GRIT, CONSCIENTIOUSNESS & SELF-EFFICACY

- Grit = Grit
- Consc. = Conscientiousness (practical)
- Self Eff. = Self-Efficacy

This table shows the individual scores for the questions relating to Grit, Conscientiousness (practical) and Self-Efficacy contained in the survey.

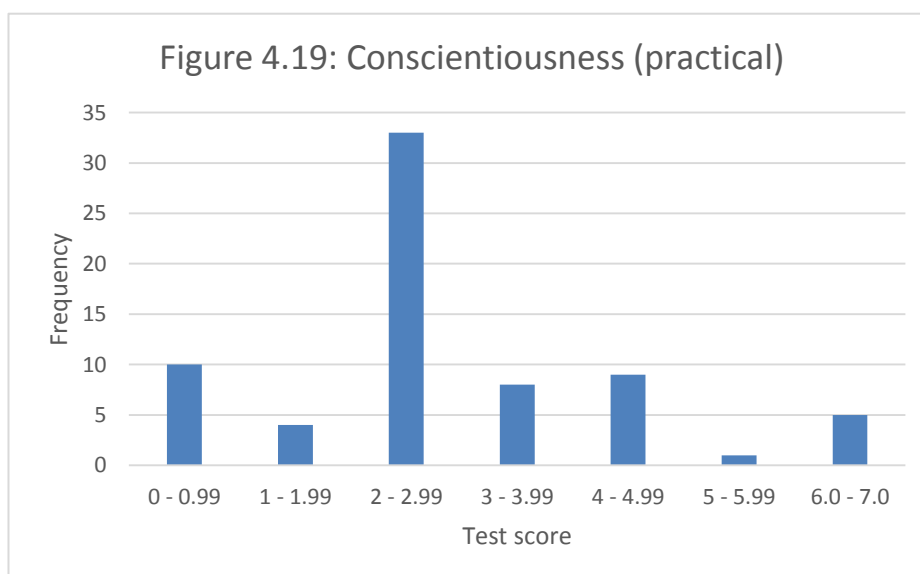
Mean scores are shown in red at the bottom of each column.

Looking first at the scores for the Grit section, the highest score is 4.75 and the lowest 1.63. This gives a range of 3.13. The mean score, as shown in the table, is 3.36. The distribution of the scores can be seen in **Figure 4.18**:



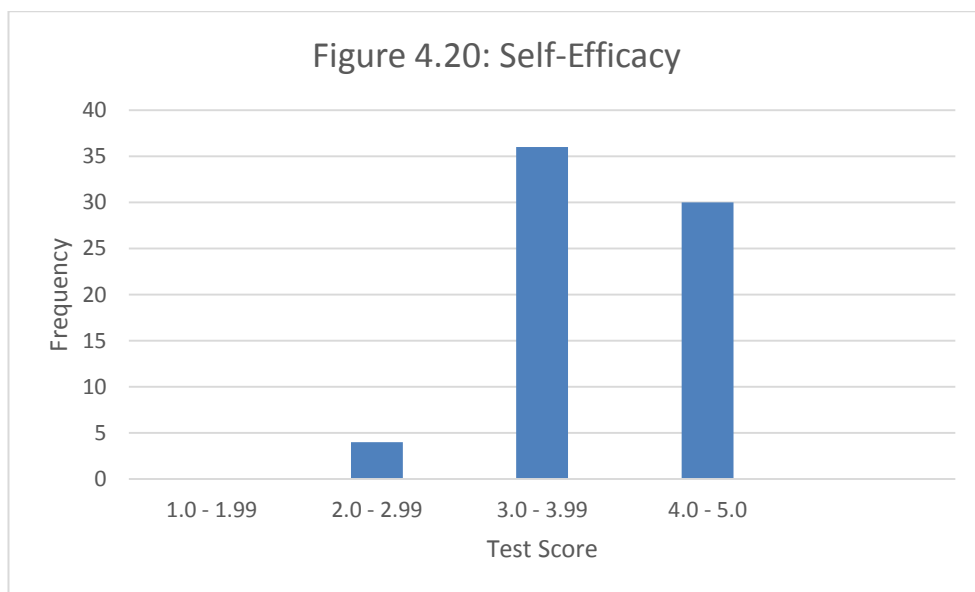
Only one respondent scored below 2.00, and the largest group (45% of all respondents) scored between 3.00 and 3.99.

Moving now to the set of scores for Conscientiousness (practical), the lowest score is 0.00, and ten respondents (14% of the sample) have achieved this. The highest score is 7.00, achieved by just one respondent. Distribution is shown in **Figure 4.19**:



The mean score of 2.37 is the lowest mean score we have seen in the survey results, even though the top score of seven is higher than in any other category, because a significant proportion of the sample (65%) returned scores below 3.00.

The Self-Efficacy test returned a lowest score of 2.00, achieved by just one of the sample, and a highest score of 5.00, achieved by two of the sample. The mean score is 3.83. The distribution of these scores can be seen in the frequency bar chart, **Figure 4.20**.



The largest proportion of the sample (94%) scored above 3.00 on this test, with a significant number (43% of the sample) scoring 4.00 or above.

The scores for the NEO Personal Inventory (revised) test are shown in **Table 4.12**. Not all of the sample completed this part of the survey, as shown by the gaps in the tabulated data. In all of the categories the minimum score is 1.00 and the maximum 5.00.

NEO PI - R				
Extra	Consc	Neuro	Agree	Open
4.000	4.600	1.400	5.000	4.000
4.500	4.100	2.300	4.600	4.500
3.100	3.600	3.700	3.500	4.900
3.500	2.600	2.700	4.200	3.400
3.200	2.700	2.700	4.200	3.400
1.500	3.400	3.600	4.300	3.700
3.400	3.700	1.400	3.500	3.500
4.500	4.100	3.200	4.800	4.100
2.900	2.600	2.100	4.300	3.900
1.900	3.500	2.400	4.200	4.900
4.400	3.600	3.500	3.800	3.800
4.000	4.500	3.400	3.400	3.900
1.500	4.800	2.300	3.600	3.100
4.300	3.800	2.900	4.200	2.900
1.900	3.600	3.300	2.900	3.300
3.700	3.800	2.600	4.100	3.900
4.100	3.800	2.800	4.800	3.600
2.100	4.100	4.500	3.900	3.800
2.900	2.600	3.700	4.000	3.500
3.100	3.600	2.300	3.500	2.900
3.600	3.600	2.800	3.700	4.000
3.700	4.800	3.700	5.000	4.500
2.200	3.400	4.100	3.600	3.100
1.800	2.600	4.000	4.100	4.200
4.200	4.500	2.000	4.200	4.400
2.300	3.500	3.200	3.200	3.700
3.100	4.600	2.400	4.600	2.900
4.000	4.300	1.500	4.400	4.100
3.500	4.400	1.900	4.300	3.900
2.800	4.500	1.600	3.500	3.900
1.600	3.800	3.200	3.300	3.200
1.400	4.300	3.900	3.800	3.400
3.200	3.600	2.400	4.000	2.800
2.900	4.000	2.800	4.300	4.000
2.700	3.200	3.900	3.400	4.200
2.500	3.600	3.600	3.200	3.200
2.600	4.100	4.100	3.900	3.200
2.700	3.200	2.700	4.200	3.100
4.400	4.600	2.400	3.900	4.400
3.300	3.500	2.300	3.600	3.100
2.600	4.800	3.200	4.600	4.000
3.000	3.500	3.500	3.700	3.900
3.400	4.800	2.300	4.400	3.800
2.900	4.300	4.100	3.400	4.100
3.700	4.200	1.000	3.800	4.200
3.000	3.200	2.600	3.700	3.100
2.600	2.300	4.000	3.400	4.300
2.300	3.700	3.100	2.800	3.300
4.200	3.400	2.900	4.300	4.200
2.400	3.500	2.600	4.000	3.500
4.500	4.000	2.800	4.300	4.100
4.300	4.500	1.100	4.800	4.500
3.100	3.400	2.100	3.400	3.000
3.200	4.000	3.100	4.000	4.200
3.300	3.800	4.000	4.900	3.800
4.600	3.700	2.400	4.700	3.700
3.800	4.000	2.800	3.400	3.600
2.000	2.400	4.400	3.000	3.600
2.300	3.600	3.600	4.400	3.000
3.800	2.800	2.800	3.800	3.500
3.600	4.300	2.200	2.700	3.700
2.100	3.900	2.200	3.600	2.900
4.300	3.600	3.300	4.400	3.900
3.143	3.760	2.879	3.944	3.717

TABLE 4.12: NEO PERSONALITY INDEX

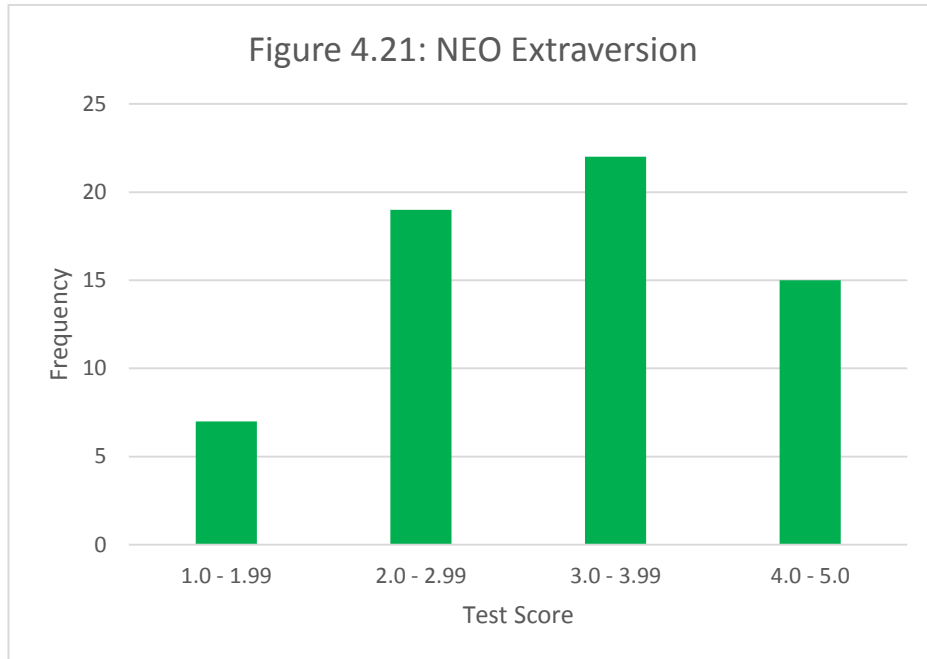
- Extra = Extraversion
- Consc = Conscientiousness
- Neuro = Neuroticism
- Agree = Agreeableness
- Open = Openness

This table shows the individual scores for the NEO PERSONALTY INVENTORY (Revised) submitted by the respondents. Note that not all respondents completed this survey, as indicated by the gaps in the data.

Mean scores are shown in red at the bottom of each column.

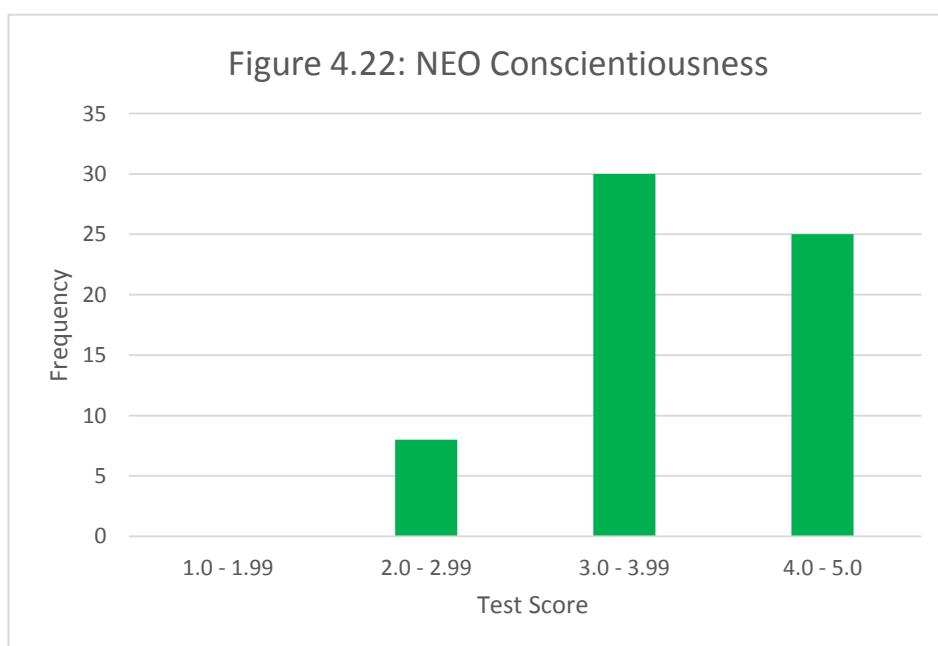


The lowest score recorded for the Extraversion category was 1.40; the highest was 4.60, so the range was 3.20. Mean score was 3.14. The distribution is shown in **Figure 4.21**:



In the second of the NEO categories, Conscientiousness, the lowest score recorded was 2.30 and the highest 4.80, a range of 2.50. The mean score in this category is 3.76. Distribution of scores is shown in the frequency bar chart,

**Figure 4.22:**

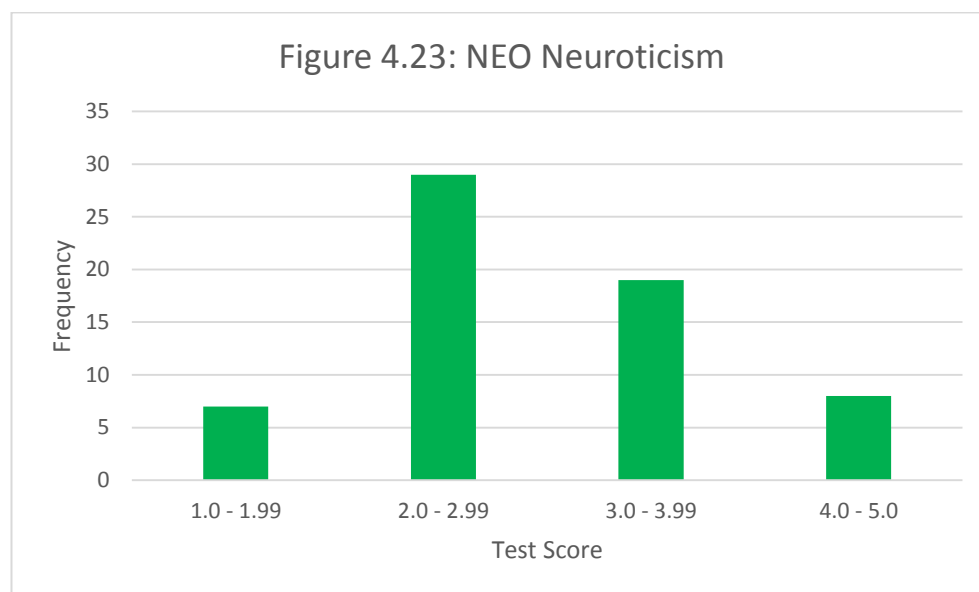


As we can see, most of the scores were in the higher range, with 87% of respondents recording scores of 3.00 or more.

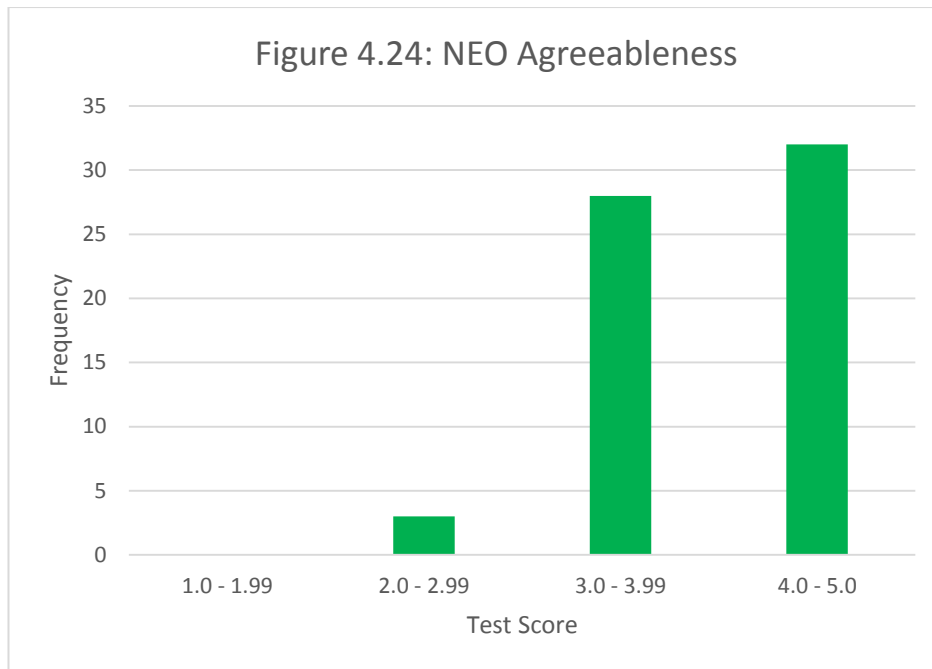
Moving on to the Neuroticism category the lowest score, recorded by just one respondent, was 1.00 and the highest score 4.50, also recorded by only one of the sample group.

The range, then, is 3.50 and, as we can see from Table 4.12, the mean score 2.90.

The distribution of scores is represented in **Figure 4.23**.



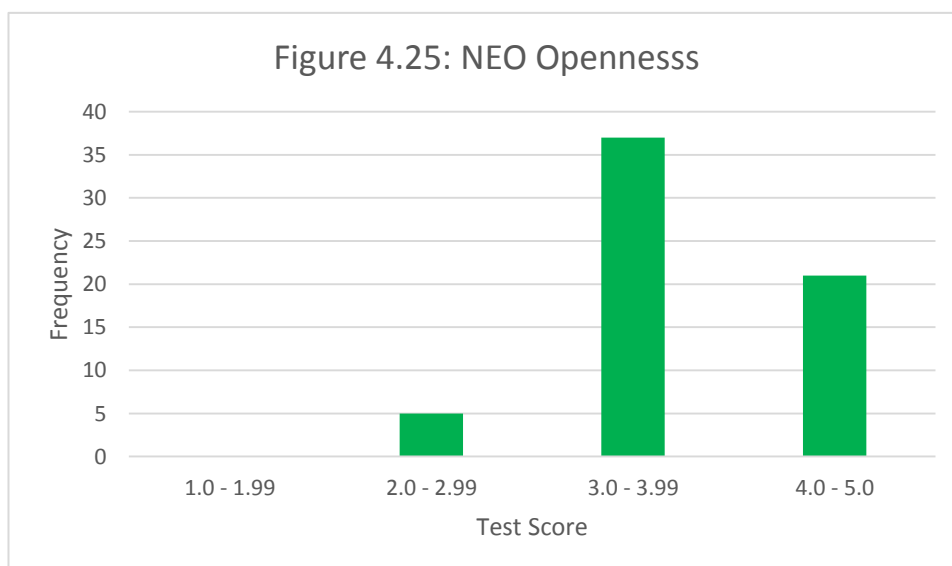
For the NEO Agreeableness category the lowest score was 2.25, recorded by one respondent, and the highest 5.00, recorded by two respondents. The range, then, is 2.75 and, as shown in Table 4.12, the mean 3.94. The distribution is displayed in **Figure 4.24**:



It is clear from the chart that most of the scores are at the higher end of the scale, with 95% of the sample scoring 3.00 or higher.

The last of the NEO categories is Openness. Here the lowest score was 2.80, recorded by one respondent, and the lowest 4.90, recorded by two respondents. This gives us a range of 2.10. The mean score, shown in Table 4.12, is 3.72.

**Figure 4.25** shows the distribution of scores:

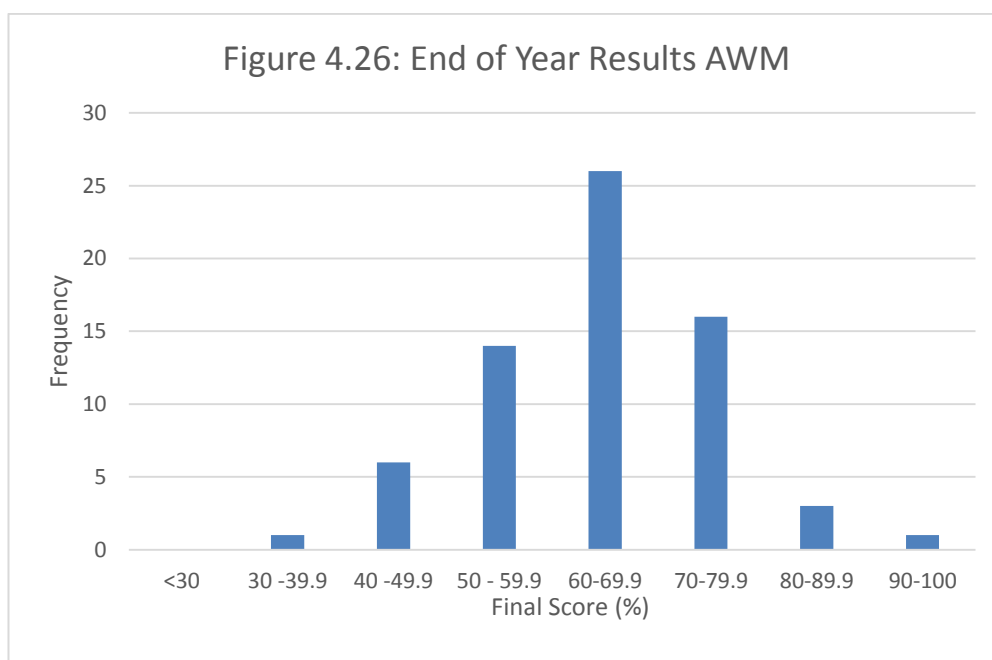


once again, most of the scores are towards the higher end of the possible range, with only five respondents scoring less than 3.00.

## 4.5: End of Year Results

The Average Weighted Mean (AWM) of the end of year results for the sample group of students is shown in **Appendix 3**. The AWM is a measure of a student's success in Year 0. For a full description of this measure, please see Chapter Three.

The small number of gaps in the table in Appendix 3 represent results for students who, for a variety of reasons, failed to complete the programme. As a consequence of these, the number of data sets available for statistical analysis is 67. Distribution of the marks from Appendix 4 is shown in the frequency bar chart, **Figure 4.26**:



## 4.6: Correlations

Having described the data collected in the various categories included in the survey, some comparisons can be made between these and the students' success on the programme, as measured by the average weighted mean of their end-of – year results. These comparisons can be made not only by looking at the whole

sample, but also at a number of sub-sets within the sample group so as to establish possible differences between these groups.

Aside from the whole sample, then, statistical analysis is presented by gender, by age group, and by academic discipline group.

The results of the Pearson correlation tests, administered using SPSS software, are shown in **Table 4.13**:

Variable	Correlation with Final Performance (AWM)							
	Whole Group	Male	Female	Under 21	21 - 24	25 +	STEM	Soc. Sci
	n = 67	n = 41	n=26	n=20	n=27	n=21	n=19	n=40
GRIT	-0.019	-0.108	0.133	0.184	0.252	-0.294	0.016	0.022
CONSCIENTIOUSNESS (practical)	*0.256	0.182	*0.390	0.327	0.166	* 0.447	0.061	0.227
MOTIVATION. Personal values	-0.161	-0.159	-0.159	-0.291	0.317	0.160	-0.274	0.001
MOT. Altruism	-0.233	-0.267	-0.171	-0.274	-0.008	-0.008	-0.159	* 0.367
MOT. Instrumental attraction	-0.169	-0.169	-0.149	-0.132	** 0.714	-0.311	-0.400	-0.003
MOT. Hedonism	*0.280	*0.363	0.149	-0.150	*0.427	0.301	** 0.575	0.030
MOT. Self image attraction	0.213	0.166	0.278	0.011	0.119	0.282	* 0.494	-0.143
SELF EFFICACY	-0.169	-0.279	-0.026	-0.274	0.217	-0.126	-0.125	-0.143
RESILIENCE. Positive world view	0.068	-0.012	0.151	0.208	0.245	-0.007	-0.093	-0.034
RES. Positive self concept	0.053	-0.184	0.315	0.105	* -0.475	0.137	-0.103	0.070
RES. Focused sense of purpose	-0.074	-0.216	0.228	-0.257	0.075	-0.094	-0.115	-0.086
RES. Flexible thinking	-0.136	-0.150	-0.136	0.020	0.05	-0.034	-0.282	-0.009
RES. Social Flexibility	*-0.250	-0.130	-0.383	-0.174	0.207	-0.206	-0.315	-0.244
RES. Organising ambiguity	-0.102	-0.171	0.009	-0.113	0.195	-0.114	0.077	-0.229
RES. Proactiveness	-0.196	-0.257	-0.146	-0.163	0.255	-0.244	-0.296	-0.185
NEO Extraversion	-0.173	-0.066	-0.360	0.284	0.006	-0.439	-0.375	-0.014
NEO Conscientiousness	-0.156	-0.199	-0.051	-0.113	0.365	-0.229	-0.121	-0.005
NEO Neuroticism	-0.059	-0.054	-0.207	-0.397	0.079	0.221	0.092	-0.085
NEO Agreeableness	-0.248	-0.237	-0.256	0.373	0.235	-0.251	-0.268	0.065
NEO Openness	-0.212	-0.213	-0.251	-0.135	0.207	-0.121	** -0.637	0.033
	* = p < 0.05							
	** = p < 0.01							
	Worthy of Consideration?							

**Table 4.13:** Table showing Pearson correlation between variables and students' final performance in Year 0.

## 1. Whole Sample.

Considering the respondents as a whole group (n=67), three variables show a statistically significant correlation with students' final performance in the foundation year (AWM) that is significant at the p<0.05 level. These are Conscientiousness (practical), Motivation (hedonism), and a *negative* correlation with Resilience (social flexibility).

A fourth variable, NEO Agreeableness, has a *negative* correlation with AWM at a significance level close to this threshold ( $p = 0.054$ ).

## **2. Gender.**

Separating the respondents into groups by gender, it can be seen that in the male group ( $n=41$ ), Motivation (hedonism) shows a correlation with AWM that is statistically significant at the  $p<0.05$  level. In the female group ( $n=26$ ), Conscientiousness (practical) shows a statistically significant correlation at this level of significance, and Resilience (positive self-concept) ( $p = 0.053$ ) shows a *negative* correlation close to this level.

## **3. Age Groups.**

Respondents were separated into three age groups, dependant on their age at the time of registering on the course (September 30th, 2014).

In the under 21 age group ( $n=20$ ), there are no correlations between any of the variables and AWM that are statistically significant at the  $p<0.05$  level, nor are there any that are close to that threshold.

In the 21-24 age group ( $n=27$ ), Motivation (instrumental attraction) shows a statistically significant correlation with AWM at the  $p<0.01$  level of significance, Motivation (hedonism) correlates with AWM at the  $p<0.05$  level of significance, and Resilience (positive self-concept) shows a *negative* correlation with AWM at the  $p<0.05$  level of significance.

NEO conscientiousness shows a statistically significant correlation with AWM at a level of significance  $p= 0.61$ .

In the 25 plus age group, conscientiousness (practical) correlates with AWM at the significance level  $p<0.05$ , and NEO extraversion correlates *negatively* with AWM at the significance level  $p=0.53$ .

#### **4. Academic Disciplines.**

Data from respondents was considered by sorting into different areas of academic discipline:

Science, technology, engineering and mathematics (STEM) subjects were the first category (n=19). In this data set Motivation (hedonism), and NEO Openness show a correlation with AWM at the  $p<0.01$  level of significance. Motivation (self-image attraction), shows a correlation with AWM at the significance level  $p<0.05$ .

In the second category, Social Sciences (n=40), Motivation (altruism) shows a correlation with AWM at the  $p<0.50$  level of significance.

The third category of academic discipline was Arts and Humanities (n=8), but it was considered that this group was too small to give reliable results, so was not used.

## **Chapter Five: Discussion**

### **5.1: Application of The Literature review**

Contrary to most research studies, the literature review here did not only inform the study, but also made a contribution to the possible toolkit. The Literature review suggested that a range of personal characteristics have been linked to successful outcomes for students in higher education. It is these characteristics - conscientiousness, hardiness, self-efficacy, motivation and resilience – that provided the content for the literature review section of the idealised schematic Figure 3.1, shown in Chapter Three. All are described, along with justifications, in the literature review. Briefly, this was useful because of the wealth of literature attesting to the relevance and importance of noncognitive attributes when considering the suitability of students for HE. Nevertheless, taken alone, there needs to be caution as some details of findings may be culture specific (there are differences even between Western societies), and some findings did not, at times, entirely agree. For this reason, the phenomenographic studies were useful in both revealing those attributes perceived to be relevant in HE culture in England, and in pointing to categories which were commonly identified.

### **5.2: The phenomenographic study**

The phenomenographic study, based on interviews with colleagues working in the foundation sector, Foundation Year students, and those considering an application to a foundation programme, three disparate groups, suggested that important contributors to a student's success would be motivation, learning processes and skills, broad perceptions of the educational process and readiness



for it, support provided to students, and a range of personal characteristics and values.

### **5.3: Motivation**

Motivation, already suggested by the literature as an important factor in students' likelihood of success, also features strongly amongst statements collected, being the largest category of description in terms of total number of statements included. If the number of statements made by respondents can be equated to the level of importance placed on a contributing factor, then, this factor is seen as the most important. Not all the groups, however, agreed in this regard. Both colleagues and current students have motivation as their leading category, but potential students place it significantly behind personality and values. It may be considered reasonable to accept that colleagues, with their experience and professional knowledge, should provide more accurate suggestions about what is needed to be successful. It may also be considered reasonable that current students who, by the time of the interviews, had experienced some of the learning and teaching on the programme, might have better insight into what attributes a successful student might have. It would be wrong, however, to dismiss the thoughts of those outside the system, that is, those who have yet to experience HE. The aim of the phenomenographical approach is to capture differing categories of interpretations. In any case, it should be noted that potential students place this category firmly in second place, with thirty-nine percent of their statements included here; motivation features strongly amongst their perceptions of what it takes to be a successful student.

Looking more closely at the individual statements in this category, a range of different motivations is evident. Some are general, mentioning motivation as a broad concept, but some introduce more specific meanings. As mentioned in

Chapter Two, Cook and Artino (2016) believe that it is important to provide specific detail about the nature of the motivation being discussed. The subject to be studied is a repeated theme, with terms such as interest, enthusiasm and passion included. Some of the statements encompass clearly extrinsic motivations, such as time and money, better qualifications, family and self-image. There are also statements which could refer to either intrinsic or extrinsic motivations; *“it’s the ultimate goal at the end that drives you. It makes you more focused”*. Categorising this statement, for example, would require knowledge of what the ultimate goal might be. Because of the nature of this method, we cannot say whether or not more importance is given to intrinsic or extrinsic motivations by the respondents, but the balance of statements collected from both colleagues and potential students is weighted towards intrinsic motivation. Current students’ statements contain more ambiguity about the orientation of the motivations.

Vermunt (2009) suggested that motivation could be sorted into five different orientations. These orientations are: (1) certificate oriented; aiming at getting a degree, (CO) (2) vocationally oriented; aiming to become a member of a certain professional community, (VO) (3) self-test oriented; aiming to prove to be able to reach one’s own goals and prove one’s own capacities (ST), (4) personally interested; working from a personal interest in the subject studied (PI), and (5) ambivalent oriented; various motivational orientations to learn, but nothing in particular (AO). The statements relating to motivation are now shown after sorting into these five orientations. The sorting was, again, an iterative process which included comparison with another researcher’s interpretation and discussion about differences. This attempt to reduce researcher bias in the

interpretation of qualitative data by establishing inter-rater reliability has been described by Bryman (2008, p. 383). The co-rater in this instance was an experienced researcher with experience of phenomenographic study. The initial sorting produced an inter-rater reliability of 79%, with agreement on twenty-three of the twenty-nine statements. After discussion, this inter-rater reliability rose to 100%, but only after an extra category for ambiguous statements was added. Vermunt's system does not seem to cover all the possibilities, nor is it always easy to use. For example, the statement *"It's the ultimate goal at the end that drives you. It makes you more focused"*, is difficult to place in any particular motivational orientation because the ultimate goal is unclear.

Table 5.1 shows the motivation statements with their orientations:

<b>Motivation</b>	
Interest in the subject is one of the major things – can be used to push them through.	PI
The Subject is the fab part of being a student.	PI
Intrinsic passion.	PI
Passion about the subject more important than career, or what they might do with the subject.	PI
They need enthusiasm for the subject.	PI
They are looking to commit 4 years of time and money.	AO
Should be excited by the course.	AO
Invested a lot in going for the degree (financial, personal, family).	CO
Motivation plays an important role.	AO
Being a student here has a lot of cultural capital out there in the world, so built-in motivation which may explain the programme's success.	AM
Common to all programmes is a clear motivation; they have thought it through and something has led them here.	AO

It is less about their qualities and more about firing something in them that makes them want to succeed.	PI
The first thing is motivation. If they have the motivation and desire, they can overcome a lot of the hurdles.	AO
Strong motivation in the first place.	AO
Can see a very clear reason for wanting that degree.	CO
You have to have an interest in the subject.	PI
Motivation.	AO
If you are interested in the subject, you will go to further lengths to get the best out of what you are doing.	PI
Should be excited by the course.	PI
Self-motivation.	AO
If you are not interested in learning, you are not going to push the boundaries in order to get better qualifications.	CO
You have to be keen to learn and have an interest in the subject	PI
The student's will and how much they want it.	ST
It's the want.	AO
You've got to be engaged with what you've got to learn – it's completely about that.	PI
It's the ultimate goal at the end that drives you. It makes you more focused.	AM
Motivation.	AO
The need to succeed – this is for me.	ST
My motivation was the children – I want to inspire them.	AO

Colleagues' statements are in black, current student statements in **red** and potential student statements in **blue**.

**Table 5.1:** The five different motivational orientations used by Vermunt (1992)

- Certificate Oriented; aiming at getting a degree (CO)
- Vocationally Oriented; aiming to become a member of a certain professional community(V0)

- Self-Test Oriented; aiming to prove to be able to reach one's own goals and prove one's own capacities(ST)
- Personally Interested; working from a personal interest in the subject studied (PI)
- Ambivalent Oriented; various motivational orientations to learn, but nothing in particular (AO).
- A sixth orientation has been added, to include ambiguous statements (AM)

Personal interest as a motivational orientation features strongly amongst the collected statements; colleagues place particular emphasis on the need for this, and a reflection on reasons for this might be helpful. It may be that colleagues consider that without this personal interest, deep learning (i.e. the construction of well-founded understandings) is less likely, with students tending to learn only what is necessary to achieve the marks required to move to the next stage, rather than engaging more deeply with the subject matter. This presupposes that deep learning is a requirement for academic success, a contention that relies on a particular definition of success that may or may not coincide with the student's own goals. Equally, it may be that because a colleague's own academic background stems from a personal interest in and deep engagement with a subject or discipline, he or she considers such personal interest to be a vital component of academic success.

Featuring equally strongly amongst the collected statements are those categorised as ambivalent oriented. Van Bragt et al (2010) suggested that this orientation had a negative correlation with some measures of success, including student retention

and the acquisition of credits in the Dutch HE system. The Dutch study, however, did not use the motivation orientation in isolation, instead combining it with the regulation strategy characterised as lacking regulation, in which students do not know what to do, how to do it or why it should be done, and the learning conception that required stimulation or co-operation. This combination is one of the learning styles, after Vermunt (1994), described in the study. A difficulty here is that we cannot be sure how Van Bragt and his colleagues might have classified the motivation statements above; despite the 100% inter-rater reliability achieved after discussion, there remains a degree of subjectivity associated with sorting the statements into their supposed orientations. This subjectivity, however, should not undermine the importance placed on these statements by participants in the phenomenographic analysis; the statements are considered and deemed to be significant, with examples from all three disparate groups. The learning styles to which these motivational orientations contribute (Vermunt, 1994), have been tested for validity in a British Higher Education setting by Boyle, Duffy and Dunleavy (2003). Their study, conducted amongst mainstream undergraduate students in Years Two, Three and Four of their course at a Scottish university, concluded that these styles were valid, but that they were also influenced by different learning environments. It could reasonably be argued that the learning environments experienced by non-traditional students in their foundation year are very different from those experienced by participants in the Scottish study, thus further influencing the learning styles.

Certificate-oriented motivation was mentioned by colleagues (2 statements), and by potential students (1 statement). The gaining of a degree as an end is certainly a motivator for some, although it is possible that others might see it as a means to

an end, such as the possibility of career advancement, or post-graduate study.

Many enquirers who approach The Foundation Centre express a wish to follow a pathway through to doctorate level, but these same enquirers, when taking part in the phenomenographic survey described above, may express their motivation as degree-focused because of the context of the interview. Equally, colleagues may have in mind that it is the degree certificate that opens the door to that further study. Self-testing as a motivational orientation only appears among statements from current students. These students were interviewed during their first term of the Foundation Year, at a time when they may well have been feeling that their capabilities were being stretched. Some may have been relishing the challenge, and it seems reasonable to suppose that such students would see this self-testing as motivational. It must be noted that none of the collected statements were categorised as being vocationally oriented. It is possible that statements collected from staff and students at a university that offered more vocationally specific degree courses might contain examples of this motivational orientation. In such institutions, vocationally oriented motivations may be seen to be of greater importance to the achievement of successful outcomes for students.

#### **5.4: Broad Perceptions of the Educational Process – and Readiness for it**

Based on the number of statements collected, colleagues placed this category of description second in importance. Staff at The Foundation Centre believe that a major cause of non-completion among students enrolling on the programme lies here. It is crucial that anyone undertaking such a programme has an accurate idea of what they are going to experience and what their needs might be. Some enrolled students withdraw before induction, because they find a funding shortfall, lack of provision to replace their caring responsibilities or family antagonism towards their taking the course. Some withdraw as time goes on

because the course is not what they were expecting. The idea of readiness is particularly important for foundation students, many of whom, unlike the traditional student progressing to the next thing straight from school or college, have caring responsibilities and financial commitments and have experienced personal independence. Returning to student status can be an unexpected culture shock; doing so without the parental support that most undergraduates enjoy can add to potential difficulties. Ensuring that potential students have this clear understanding of what they are going to experience is seen as an important part of the information, advice and guidance given by staff during the pre-application and conversion phases of the admissions cycle. Recent changes to how this service is delivered, so that every new enquirer or applicant has a member of academic staff who will see them through the entire programme as academic adviser and is responsible for them from the outset, are an attempt to improve the applicants' experience, ensuring that they are well supported and any particular needs are identified as early as possible. Some form of measure of a student's understanding and readiness, as described, would be useful in a toolkit, if only to ensure that everything possible has been done to ensure that such understanding and readiness exists.

### **5.5: Making up the Deficits**

This category, made up entirely of statements by colleagues, underlines the belief that staff have that the right interventions can overcome all kinds of learning obstacles. This can, of course, reflect an ideological view, but it is also a view based on experience; not every ugly duckling will become a swan, but staff have witnessed some remarkable transitions over the course of a student's passage through the system. Such transitions bring enormous satisfaction to teaching staff and highlight important questions about who should be given this chance or,



more importantly, who should be denied it. Anecdotes about students who have flourished against the odds are used to justify offering places to applicants with some evident weaknesses. This is where the selector's intuition plays an important part in the decision-making process, a theme I will return to when presenting conclusions.

### **5.6: Personality and Values**

The statements collected in this category can be summarised in just six words:

independence, flexibility, resilience, determination, perseverance and self-efficacy. These are the six personal characteristics seen by respondents in all three groups as important for students' success. Three of the characteristics, resilience, perseverance and self-efficacy, have already been highlighted by the literature review; the remaining three are unsurprising. Independence is a characteristic long recognised as an asset to students entering higher education and selectors use their assessment of an applicant's independence, usually based on extra-curricular activities reported in an application and comments from referees, as one of the criteria on which decisions are based. With (at least) four years of study ahead, determination will be needed, particularly for those who, like many foundation students, may not have had successful outcomes at school. Without flexibility, students with family and caring responsibilities may have real difficulties fitting everything together.

Results from the phenomenographic analysis, then, have provided a range of characteristics and attitudes that may be important for student success.

Significantly, they have also served to reinforce those identified in the literature review and suggest that they have at least some relevance in the UK setting. The next source was the personal attributes survey.

## 5.7: Personal Attributes Survey

Given the evidence found in the literature review, it may be expected that analysis of the collected data would reveal clear and significant correlations between respondents' conscientiousness, motivation, resilience, self-efficacy and hardiness, and those respondents' success. When data from all sixty-seven respondents to the questionnaire were analysed, there were some statistically significant correlations with students' performance in the Foundation Year (Year 0), as measured by the average weighted mean of the marks attained for summative assessments in the modules taken across both teaching blocks (AWM). The same can be said for all the various subgroups, with the exception of the under 21 age group, in which no statistically significant correlations appear. This disparity between the groups suggests that the subject is complex. While it may seem a simple matter to identify and look for personal attributes in applicants, this is far from reality. The characteristics which relate to success show signs of varying with age, sex and academic discipline, so it would be unhelpful to over-generalise.

It should come as no surprise that characteristics desirable in students studying physics, say, may be different to those desirable in students studying sociology. This is borne out by the results when we compare the STEM subgroup with the Social Science subgroup; there are no statistically significant correlations common to both groups. The same is true when we compare the different age groups, and when we compare the sexes. With this in mind, it seems that a toolkit suitable for use by admissions selectors across the whole range of courses offered by The Foundation Centre is unlikely to be workable, and it may be necessary to provide a range of toolkits, allowing for this disparity between subject groups,

age groups and the sexes. What might be described as the Holy Grail of admissions tutors, at least in a Foundation Centre –one simple toolkit which clearly identified those would-be students who will be successful – remains elusive, if it even exists at all. There can be few instances so clear where one size does not fit all students and situations. At best, thought may be directed at a range of toolkits, each one tuned to the subject discipline, age, and sex of the applicant.

### **5.8: Correlation significance**

Table 4.13, in Chapter 4 above, shows the results of the Pearson correlation test and highlights those correlations which are significant at  $p < 0.05$  and  $p < 0.01$ . In addition to these standard significance measures which mathematically assess the probability of the data arising if the null hypothesis were true, the table also shows, highlighted, correlations which may be worthy of consideration. Some explanation may be helpful here. Within the context of this study it is reasonable to use such indications of possible relationships between measured personal attributes and students' success as may be available from the data, rather than restricting such indications to those data which lie within the strict limits imposed by the significance test. This approach is evidence-based. Ziliac and McCloskey (2008) suggest that significance values in statistical analysis are arbitrarily set and may have little bearing on what we may actually be interested in. Indeed, they argue that statistical significance does little to help with scientific inference or rational decisions about the importance of data. They are not alone in voicing concerns about the use of these so-called p-values, and the increasing debate has led to the American Statistical Association (ASA) producing a formal statement aimed at clarifying their proper use and interpretation (Wasserstein & Lazar, 2016). Some of the numbered principles laid out in the ASA's formal

statement have a direct bearing on this study and the analysis of the data collected in the personal attributes survey:

*1. P-values can indicate how incompatible the data are with a specified statistical model.*

A low p-value can provide acceptable evidence against the null hypothesis, or assumptions associated with that hypothesis. For example, in the analysis of data I have shown that correlation between motivation (instrumental attraction) and success for students in the 21 – 24 age group has a p-value of less than 0.01. It is reasonable, then, to accept this as evidence that the null hypothesis (that there is no correlation between this aspect of motivation and these students' success) is unlikely to be true.

*3. Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold.*

This principle warns against using a p-value threshold, such as  $p \leq 0.05$  or  $p \leq 0.01$ , as a dividing line denoting that on one side of this line a conclusion is true and on the other side the conclusion is false. Other factors need to be considered within the context of a particular study in order to make informed decisions about the interpretation of the data. In Table 4.13 above, those correlations marked as worthy of consideration? fall above the  $p < 0.05$  threshold, but this may not mean that they do not suggest an indication of some relationship.

*5. A p-value, or statistical significance, does not measure the size of an effect or the importance of a result.*

In the example given above, it would be wrong to interpret the  $p < 0.01$  result as an indication that the influence of motivation (instrumental attraction) on the

outcomes for students in the 21-24 age group is greater than the influence of motivation (hedonism), which shows a p-value of  $<0.05$ .

Finally, these correlations do not stand on their own but can have support from the review of the literature and the phenomenographic analysis, in essence, providing some evidential triangulation in some instances. For example, Conscientiousness (Practical) showed statistically significant correlations for the whole sample and for two of the sub-groups, as well as correlation worthy of consideration in another sub-group. The importance of this characteristic is borne out widely by the literature in general, and specifically by McLachlan, Finn and Macnaughton's study (2009). Further, it is confirmed in the phenomenographic study by statements such as "have a hard-work attitude".

### **5.9: Conscientiousness (Practical)**

If we now consider the individual variables, the first of interest is conscientiousness (practical), which shows statistically significant correlations with the Average Weighted Mean (AWM), our measure of students' success, in the whole sample and in two of the sub-groups, females and the over 25 age group. The other test of conscientiousness, administered as part of the well-established NEO set of tests, has produced no such results. Indeed, the data collected from this test has shown no statistically significant correlation with AWM in any of the sample groups, nor is there any correlation between the data collected for these two variables, NEO conscientiousness and conscientiousness (practical). This apparent contradiction needs careful consideration.

Conscientiousness (practical) data was gathered using a straightforward task-response questionnaire, in which respondents could show that they had completed pre-set tasks by answering questions relating to those tasks. Not only

would it have been difficult for them to suspect any underlying motives for these questions, it would also have been difficult to respond inaccurately; either they had completed the tasks or they had not. The NEO test, on the other hand, was more transparent eliciting responses, on a scale from 1 to 5, to statements such as “I pay attention to details”, “I get chores done right away”, “I shirk my duties”. Both surveys were conducted on the second day of induction, when new students found themselves in an environment where they had high hopes of success in the months to come, and were aware that the survey responses would be scrutinised by somebody who they may reasonably perceive as being instrumental to that success. Given these circumstances, it seems possible that social acceptability and giving the scrutineer what they considered was expected could have been responsible for some unreliable results in the NEO test.

It is also possible that the two conscientiousness tests are, in reality, measuring different characteristics, as evidenced by the lack of correlation between data collected for these two variables. The self-reporting NEO test is designed to assess the components of the psychological construct of conscientiousness, said to be “a spectrum of constructs that describe individual differences in the propensity to be self-controlled, responsible to others, hardworking, orderly, and rule abiding” (Roberts, et al. 2014, p 1315). The practical test of conscientiousness devised by the researcher is simpler and may not be accurately measuring this spectrum of constructs, but its success in measuring a characteristic that does show a statistically significant correlation with students’ achievement in Year 0, suggests that it is a useful tool. In addition, it has the advantage of being quick and easy to administer in the context of the admissions process. The conscientiousness index (CI) developed at a university medical

school to provide a measure against which to gauge professionalism amongst medical students, is based on similarly practical objective measures of conscientiousness, such as attendance and submission of information and assessments by a deadline (McLachlan, Finn and Macnaughton, 2009), so there is a precedent and some support for such a simple measure.

Conscientiousness (practical) is the only variable for which the Pearson test returned no negative correlations, either in the whole group or in any of the subgroups. The positive correlation of 0.33 in the under-21 subgroup, although not statistically significant, may be worthy of consideration. Being just a little below the figure required for statistical significance in this small group (n=20), it may still hold useful information when considering toolkit contents.

#### **5.10: Motivation: Personal Values**

Moving next to the variables that deal with motivation, there are a number of statistically significant correlations recorded in this set. The variable Motivation: Personal Values shows no correlations with significance values  $< 0.05$ , but the correlation figure of 0.32 in the 21 – 24 subgroup may be worthy of consideration when constructing a toolkit.

#### **5.11: Motivation: Altruism**

Altruism as a motivator has only shown a statistically significant correlation with success, as measured by AWM, for one of the subgroups, students studying social science subjects. The questions relating to this aspect of motivation are all transparently oriented towards altruistic ideals:

Why are you attending university?

- Because I genuinely want to help others with my knowledge.
- Because I want to make more contribution to society.

- Because I want to help solve society's problems.
- Because I want to improve the world situation.
- Because I want to specialise in an area so I can make a great contribution to society.
- Because I want to be more useful to society.

That altruism has correlated significantly with success for social science students may not be surprising, but that it has not correlated significantly with success in any other subgroup serves to highlight differences between students attracted to different disciplines already mentioned above. Here is suggested a clear difference in motivation between those studying different disciplines.

#### **5.12: Motivation: Instrumental Attraction**

The data collected under the Instrumental Attraction heading comprised responses from twelve questions, six of which were scored in reverse order (instrumental avoidance) as detailed in Chapter 3. The questions in the instrumental avoidance category were:

Why are you attending university?

- Because I don't know what else to do.
- Because it's a better alternative to working.
- Because it gives me something to do.
- To avoid being unemployed.
- Because I don't have any better options.
- Because this is my only way out.

And for instrumental attraction:

- To gain valuable skills for my career.
- To secure a job for the future.
- To enhance my job prospects.
- In order to get the qualification.
- Because it will help set up my future career.
- So I can use my degree to earn a lot of money.



This variable suggests, again, that the different subgroups of students have different attributes. Here there is a statistically highly significant ( $p < 0.01$ ) correlation with final performance for the 21-24 age group, but no statistically significant correlation in any other subgroup. If we include those correlation figures marked as worthy of consideration, then two of the subgroups, 25+ and STEM, show a *negative* correlation. Some of these statements might easily fit into one of Vermunt's orientations, such as certificate oriented, or vocationally oriented, so it may be possible to draw some parallels with statements collected in the phenomenographic study.

### 5.13: Motivation: Hedonism

The variable Motivation: Hedonism shows a statistically significant correlation with AWM in four of the groups: whole sample, male sub-group, 21-24 age group and, with a correlation significance of  $p = < 0.01$ , the STEM sub-group. In the 25-plus age group, the correlation figure of 0.301 may also be worthy of consideration.

According to The Oxford English Dictionary, hedonism is the doctrine or theory of ethics in which pleasure is regarded as the chief good, or the proper end of action. This does not appear to be particularly helpful in understanding this observation. Indeed, it is counter-intuitive to consider that a student embarking on a physics degree course, an example of one of the disciplines included in the STEM sub-group where the most significant correlation exists, is likely to be strongly motivated by hedonism. Although social stereotyping should be avoided, it might more reasonably be expected that such a student may possess attributes that are less likely to be socially interactive. Perhaps the questionnaire designers have used the term hedonism in a different way. To investigate this,

the survey questions should be reviewed. Those that relate to this particular variable are:

Why are you attending university?

- Because it is a fun place to be
- Because I enjoy the social life
- Because I have more freedom away from my parents
- Because it's a great place to develop friendships
- Because I get to know a lot of people
- Because I can improve my social skills.

Initial reading of these survey items, answered on a 1-5 Likert type scale, suggest that they do relate to the pursuit of pleasure and social interaction. How, though, have the questions been interpreted by the respondents to the survey? To get a clearer idea of whether there may have been a tendency to interpret the questions in a different way, a small group of Foundation Centre students, enrolled on courses beginning in October 2015 (2015 focus group), were asked to look at these questions and give their own interpretations. The focus group comprised two STEM subject students, three social science subject students, and one humanities student. Their interpretations of these survey questions were entirely in agreement, both with one another and the interpretation above; all believed that the questions related to the pursuit of pleasure and enjoyment.

To gain a better understanding, an interview was arranged with a current, Third (final) Year physics undergraduate. He expressed no surprise at the survey outcome, describing himself as the life and soul of any party, turning up with his cocktail shaker and box of ingredients to help everyone escape from “those typical, boring, student drinks”. His suggestion was that as a scientist he was all too aware of his own insignificance in the universe, so he tended not to take himself, or life in general, too seriously. The opinion of a single student is far

from convincing as research evidence, but the interview certainly underlines the need to understand and challenge personal bias in all its forms, including social stereotyping. This aspect of a student's motivation *to attend university* would not fit into any of Vermunt's orientations described above, which relate to motivation *to study*, so a comparison between these survey results and the statements gathered by the phenomenographic studies is not possible. The statistically significant correlations returned in the data analysis reinforce the diversity of motivations needed for students to successfully navigate their path through the university experience, and suggest that this needs to be included in any toolkit for appropriate subgroups. While it would be satisfying to ascribe a believable cause to such a finding, correlation itself does not and cannot indicate a cause – effect link between its variables, only that one variable varies with another. That is not, in itself, a large problem, as the toolkit needs only a correlation between a variable and students' success. While a cause is potentially a powerful predictor of the future, correlates have a useful purpose when used cautiously.

#### **5.14: Motivation: Self-image Attraction**

The survey questions for this variable are, like those above, divided into two sets of six. The first set addresses Self-image Attraction:

Why are you attending university?

- Because my family will be proud of me.
- Because I can get recognition from others for doing so.
- Because it is a prestigious thing to do.
- Because I can get respect from others for doing so.
- So that other people would approve of me.
- Because I want to be a famous person.

The second set addresses self-image avoidance, and is scored in reverse:

- Because my friends go to a university.

- Because others expect me to get a degree.
- Because other people have told me I should.
- Because it would disappoint other people if I didn't.
- It seems to be the recommended thing to do.
- Because of social expectations from those around me.

This variable also shows a statistically significant correlation with AWM for just one of the subgroups, STEM. Again, the questions cannot easily be related to Vermunt's motivational orientations; these are more about being at university than about studying, in spite of study being implicit in some of them.

#### **5.15: Resilience: General**

The group of variables contained under the general heading of Resilience contains only two correlations statistically significant at the  $p < 0.05$  level, and three correlations considered to be otherwise worthy of consideration. Data collected show that responses to questions associated with these variables tended towards the positive end of the range of values, rather than being evenly spread.

#### **5.16: Resilience: Positive Self-concept**

Positive self-concept shows a statistically significant negative correlation with success for the 21 – 24 age group and a positive correlation worthy of consideration in the female subgroup. The questions associated with this variable were:

- I believe I am a capable person.
- I am confident that if I work hard I will succeed regardless of the situation.
- When I face challenges I always find a way of rising to the challenge.
- In stressful times I control my feelings and stay positive.

Why there should be a negative correlation between this variable and success for students in the 21 – 24 age group is not obvious, but this link, as well as the positive one for the female subgroup, cannot be ignored when designing a toolkit.

#### **5.17: Resilience: Social Flexibility**

Social Flexibility is the only other variable in this group which returned any correlations of note. A negative correlation with a statistical significance  $p < 0.05$  was shown between this variable and students in the whole group, and negative correlations worthy of consideration were also found in the female subgroup and the STEM subject subgroup. Questions for this variable were:

- I like to make friends.
- I find it easy to ask for and accept assistance and support from others.
- During tough times, I care about the feelings, needs and motivations of others.
- I share my feelings and concerns with people whom I trust.

Again, it is not obvious why negative correlations should appear between this variable and students' success, but such results cannot be ignored in the process of toolkit design.

#### **5.18: NEO Extraversion**

The extraversion variable, as measured by the NEO personality inventory (revised), has shown no statistically significant correlations, but has shown negative correlation worthy of consideration with success for our students in three of the groups: females, 25-plus age group and the STEM subject group. This is in line with other research. O'Connor and Paunonen (2007) have suggested that extraversion has shown negative correlation with post-secondary

academic performance in a number of studies, and that some researchers have related this to the extravert's likelihood to spend more time socialising while the introvert might spend more time studying.

#### **5.19: NEO Conscientiousness**

This variable showed no statistically significant correlations, and one correlation worthy of consideration, in the 21 – 24 age group. The discussion, above, concerning the Conscientiousness (practical) variable, includes some comments about the usefulness of this NEO variable.

#### **5.20: NEO Neuroticism**

Neuroticism has shown no statistically significant correlations, but a negative correlation worthy of consideration in the under 21 age group. Again, O'Connor and Paunonen (2007) reported that some researchers have found negative correlations between this variable and post-secondary academic performance, and suggest that this may be due to the anxiety which neurotic individuals experience when under pressure to produce assessed academic work. They further suggest that, because such correlations are small and have narrow confidence intervals, neuroticism is not a reliable predictor of academic performance, and extreme neuroticism could be imagined to be an impediment to success.

#### **5.21: NEO Agreeableness**

Agreeableness has shown no statistically significant correlations, but a correlation worthy of consideration in the under 21 age group and a negative correlation worthy of consideration in the whole group. Once again, this is in line with the findings reported by O'Connor and Paunonen (2007): some researchers have found positive correlations and others have found negative correlations between this variable and post-secondary academic performance. On this basis,

they conclude that the variable is not an important predictor of academic performance.

### **5.22: NEO Openness**

Openness to experience has shown a statistically highly significant negative correlation with success for students in the STEM subject group. This does not fit the pattern suggested by other research, which shows either positive correlation with post-secondary academic success, arguably attributable to a possible connection between openness and intelligence, or null correlation (O'Connor and Paunonen, 2007). The apparent contradiction here is difficult to explain and may be the result of an unknown moderator variable that has not been identified by our survey.

### **5.23: General comments on the NEO-PI-R Test**

The Neo Personality Inventory (revised) was used in this study because of convenience. The test was being administered to the same sample group at around the same time as the personal attributes survey, and its usefulness as a comparison for the simple conscientiousness test included in that survey was seen as a good reason to include the data collected. The literature review established that conscientiousness is considered to be an important factor for academic performance, and this is borne out by the results of the conscientiousness (practical) part of the personal attributes survey, but none of the other Big Five factors have been established as important in predicting academic performance, so any measure of these is unlikely to be a helpful component of an admissions toolkit.

## **5.24: Bringing Together the Evidence**

Evidence gathered in the three sections of this study can now be brought together so as to determine which of the studied characteristics may be appropriately incorporated into a toolkit, or, more precisely, loosely predictive toolkits.

## **5.25: Conscientiousness**

All three sources of data agree that conscientiousness may be a useful predictor of students' success. The literature reviewed in Chapter Two ranks conscientiousness as of high importance for students' success (Busato et al., 2000; Chamarro-Premuzic & Furnham, 2003; Duff et al., 2003; Marshall, 2013; Nofle & Robins, 2007; Wagerman & Funder, 2007). Although none of the statements collected in the phenomenographical study were classified specifically as denoting conscientiousness, some statements could be construed as describing conscientious behaviours (e.g. "Have a hard-work attitude"; "You need to be really organised – that's the number one thing"; "Organisational skills are very important"). In the personal attributes survey, conscientiousness (practical) correlated with success in the whole sample, the female sub-group, and the 25-plus age group. Given the weight of evidence, then, across the three sources, measures of conscientiousness should be included in admissions selectors' toolkits.

## **5.26: Readiness**

The literature suggests that readiness for post-secondary education is an important indicator of student retention and success (Conley, 2008; Walton, 1979). Of the statements collected in the phenomenographic study, more than 30% of those made by FC staff were concerned with readiness, and their views



are based on experience. An awareness of how lack of readiness may affect a student's likelihood of successfully completing a programme of study has made this, for such staff, an important indicator. There were no sections in the personal attributes questionnaire to test readiness, so that part of the study has nothing to contribute here. Strong evidence from the other two sources of data, however, mean that this is a variable that should be included in toolkits.

### **5.27: Motivation**

Evidence from literature is unequivocal: motivation to learn is central to a student's successful passage through any course of study. The different motivational orientations described by Vermunt (1992) and the comparisons of contemporary theories of motivation made by Cook and Artino (2016) serve to highlight how complex the issue of motivation is, and this complexity is reflected in the results of both the phenomenographic survey and the personal attributes survey carried out as part of this study and described in Chapter 4. The distribution of statements collected in the phenomenographic survey shows that motivation featured more strongly than any other category of description, with 35% of the total statements being allocated to this category. The statements themselves show a range of orientations from the intrinsic, "passion about the subject" to the extrinsic, "invested a lot in going for the degree (financial, personal, family)", so complexity is reflected here. The motivation section of the personal attributes survey divides scores into five different categories and the variety between different groups within the sample shown by the analysis of the results show that different categories of motivation may be linked to success for different groups. Social Scientists, for example, may require different motivations to natural scientists in order to study successfully in HE. There seems no doubt, though, that motivation in its various forms is linked to

successful outcomes for students, and an assessment of motivation should be included in any admissions toolkit. Where appropriate, differences between categories of motivation should form part of that assessment. For instance, results indicate that altruism as a motivating factor applies only to those studying social sciences, so this characteristic should be included in an assessment of applicants for social science subjects, but not in assessments of applicants for other subject areas.

#### **5.28: Resilience**

The link between those personal qualities displayed by individuals described as resilient and academic performance has been suggested in the literature (Allen, McKenna and Dominey, 2014; Johnson et al., 2015; Wang et.al.,1998; Wayman, 2002; Webb, 2014). Although none of the five categories of description arrived at by the iterative sorting of statements collected in the phenomenographical survey was labelled as resilience, there are clearly some statements amongst those in the personality and values category which show such qualities.

These statements are all linked to qualities displayed by resilient individuals:

- Independence; the strength of character to resist potentially negative influences and stand alone.
- The big difference is determination – to do what is asked and carry on when there is a difficulty.
- Persistence got me through.
- It's a kind of mind-set really. Whatever else is going on in their life, they still need to be able to get on with the study.

- It is like a hill with no way round – so you have to go over it; you have to find a solution.

On this basis, and considering that resilience scores were high for the large majority of the sample group (who were already selected as being likely to succeed in HE), there could be a place for an assessment of resilience in one or more toolkits, tempered by the outcomes of the Pearson Correlation tests for the resilience categories in the personal attributes survey, as shown in Table 4.13 in chapter 4.

### **5.29: Failures**

No particular pattern was found among the data collected from the seven students who failed to reach the required 50% to progress to their degree programmes. Of the seven, six submitted claims that their performance had been affected by serious adverse circumstances and these claims were upheld by the examinations board, so that they were given further opportunities to attain the pass mark. The adverse circumstances included health issues, caring responsibilities and bereavement. It is possible that a more thorough assessment of readiness for study may have highlighted difficulties around caring responsibilities, but none of the other circumstances could have been predicted or relate readily to personal attributes, so it has not been possible to gain any useful information which may help to identify individuals unlikely to pass the programme successfully.

### **5.30: Limitations**

Any research or scientific investigation needs to fulfil requirements of validity and reliability. Consideration also needs to be given to the appropriateness of the sample group and whether it is representative of the target population.

### **5.31: Validity**

For a measure to be valid, it needs to be actually measuring what it purports to measure. In the Personal Attributes Survey administered as part of this study, the only section specifically designed for the sample group was the Conscientiousness (practical) section. The other components of the survey were taken from other research and, although they have been shown to be valid measures in other contexts, such validity has not been demonstrated here. For the measures to be valid in the context of this study, they should be able to predict outcomes for students gaining admission to a foundation programme. Ideally, all applicants would be admitted and the measures applied. Accurate prediction equations could then be developed relating these measures to students' outcomes. This has been attempted, but more work, over a longer period, is needed. Moreover, all applicants were not admitted and this leads to other considerations which I will discuss below when considering the sample group.

### **5.32: Reliability**

If a measure can be said to be reliable, it needs to produce consistent results. The tests applied in the correlation study had been found to be reliable, having been compiled and tested for that purpose by their original compilers. While using tests outside their original applications can raise questions about their validity and reliability, here the approach used deliberately brought in three sources of information to triangulate findings and thereby produce some confidence in the results.

### **5.33: Sample Group**

A significant difficulty relating to this research is that the sample group comprises individuals who have already been selected for a place at The Foundation Centre. These people, then, have already been judged to possess such

characteristics as may be needed for success in Higher Education, so it may be expected that the range of data collected in the personal attributes survey should reflect this. If, for example, we look at the data collected for the characteristic Resilience, it is clear that all of the respondents' scores were more or less high, providing a limited range of results for this variable. This limited range is likely to have had an effect on data analysis and may go some way towards explaining some of the unexpected (and unexplained) correlations observed. Both the literature review and the phenomenographic study have suggested the importance of resilience for students' success, but the analysis of data collected has not provided evidence of a strong link. Ideally, our sample group should be made up of individuals who have not been through any selection process, but in practice it is unlikely that this could be accomplished. The sample group for the phenomenographical survey included some unselected members, those considering an application but as yet only exploring the possibilities, and this is better. Had the personal attributes questionnaire been given to this group as well, the range of responses may have been wider, and this option should, if possible, be included in future evaluative work of the toolkit(s).

#### **5.34: The Possibilities of Remediation**

At the beginning of this study, my aim was to identify characteristics that were linked to successful outcomes for students in HE in order to inform the admissions process. My specific concern was that selectors had too little information on which to base their decisions when considering applications from those who lacked the traditional evidence of academic merit. The study has identified some measurable characteristics that might be useful in identifying

those applicants more likely to succeed, and measures of these characteristics could be incorporated in a toolkit (or toolkits) to aid selectors in their decision-making.

It seems, however, that there is also a wider purpose for the use of these measures. Some of the literature reviewed in Chapter Two has shown that, given appropriate conditions and carefully designed interventions, remediation may be possible where there is deficiency in certain characteristics.

Positive reward of conscientious behaviour (Hill and Jackson, 2016), alongside effective and timely feedback (Van Bragt et al. 2010) may help students who need to improve their conscientiousness. Hardiness and Grit might be improved using interventions designed using the ideas of Khoshaba & Maddi (2001), and those of Shechtman et al. (2013). There seems no doubt that motivation can be influenced by a wide variety of interventions. Many such interventions are already well known in the business community (e.g. Rohn, 1996), but much fruitful research has also been done in the field of education (e.g. Dweck, 2000). Work designed to reinforce students' belief in their own coping abilities might be used to improve their self-efficacy (Chemers, Hu & Garcia, 2001; Zimmerman, 2000), as might positive feedback models (Bouffard-Bouchard, 1990). This latter could realistically be linked to the feedback model described by Van Bragt et al. (2010) to improve conscientiousness, as mentioned above. Peer mentors could be used to help students improve their resilience (Johnson et al. 2015), and these might also help students understand their capacity to develop intellectual capacity (Yeager and Dweck, 2012). Pre-induction engagement with individual

advisers and with wider material provided by institutions could do much to improve students' readiness for the transition into HE.

Measures of these desired characteristics, then, taken at a stage early enough to inform the selection process, could also be used to inform some elements of course design and provision, so that students are supported and given the tools needed to make up any deficiencies in these personal attributes. This assumes, of course, that there are tutors with the skills, or the willingness to learn them, who will support the remediation process with direct instruction, through practice, and with the help of material resources.

In the final chapter, The Conclusion, I turn to the toolkits themselves and offer suggestions for their specific content and use.

## Chapter Six: Conclusions

### 6.1: Findings of the study

From the combined sources of literature review, phenomenographic study and personal attributes survey, this study has identified a number of attributes which tend to be associated with success. Clearly many things affect success together; each, by itself, contributing only a small amount so care must be taken to see the attributes as a collective whole, and, because people and contexts are complex, inevitably only a part of the picture of the potentially successful student..

There was evidence that these contributing attributes vary with academic discipline, age and, possibly, gender. Therefore, instead of a well-defined single toolkit, I will offer illustrative toolkits tailored to particular ends and purposes. It is important to recognise that such toolkits will be relatively situation specific.

Here, Foundation Level students have been the focus of the study. Included amongst these students are:

- Those who have delayed entry to HE for a variety of reasons. They may have gone into the workplace, started a family or travelled. Many of these students, whose education has been interrupted, fall into the 21 – 24 age group. They may not have attempted higher level study before leaving full-time education.
- Those who have decided later in life to embark on HE. Some will have established careers with which they have become disenchanted or need better qualifications to make career progress; some may have had poor experience in the school system resulting in a lack of belief in their suitability for academic study; some may have joined the armed forces at 16 and have completed their service. Many will lack any post-16



qualifications, although a few who are seeking to change direction may be qualified to degree level and beyond. Most of these students fall into the 25 plus age-group.

- Those from overseas. These students, from countries where the education system does not provide an equivalent to the UK A-level certification. They do, however, often have recognised academic qualifications. The large majority are under 21 years of age.
- Those who are changing academic fields. Typically, these are high-performing A-level students and are under 21 years of age.

Turning now to the research question: The Selection of Potential Undergraduate Students for a Foundation Course who Lack Traditional Qualifications: is a toolkit to support the decision-making process possible?

One toolkit is unlikely to be successful because it would be too general or aspecific. Therefore, I offer suggestions for several context-specific potential toolkits which may be supplemented as needed by users.

## **6.2: Illustrative Toolkits**

In particular, there is sufficient evidence to support toolkits for STEM and Social Science disciplines, as follows:

**Table 6.1: Illustrative Toolkit for STEM subject applicants**

Selectors should satisfy themselves about the students'	Focus
<ul style="list-style-type: none"> <li>• <b>Motivation</b></li> </ul>	Including Personal Interest, Hedonism and Self-image attraction
<ul style="list-style-type: none"> <li>• <b>Readiness</b></li> </ul>	Does the student have a clear and realistic understanding of what the course entails?
<ul style="list-style-type: none"> <li>• <b>Conscientiousness</b></li> </ul>	Will the student turn up to class, complete tasks and submit assignments on time?
<ul style="list-style-type: none"> <li>• <b>Negative tendency towards Social Flexibility</b></li> </ul>	Students who attach importance to making friends, seeking assistance and support from others, caring about the needs of others and sharing feelings/concerns with others may not perform well as those who do not.

**Table 6.2: Illustrative Toolkit for Social Science subject applicants**

Selectors should satisfy themselves about the students'	Focus
<ul style="list-style-type: none"> <li>• <b>Motivation</b></li> </ul>	Including Personal Interest and Altruism, a motivating characteristic that is unique to this group of students.
<ul style="list-style-type: none"> <li>• <b>Readiness</b></li> </ul>	Does the student have a clear and realistic understanding of what the course entails?
<ul style="list-style-type: none"> <li>• <b>Conscientiousness</b></li> </ul>	Will the student turn up to class, complete tasks and submit assignments on time?

Note how the relative order and attributes overlap, but are not entirely the same.

For example, although motivation appears in both of the above toolkits, the focus

of that motivation varies between the two. A desirable motivation characteristic common to both is Personal Interest, but STEM subject applicants might benefit from Hedonism and Self-Image Attraction as motivators, those wishing to study Social Science subjects are more likely to need Altruism as a motivator. Results also suggest that Social Flexibility may not be a desirable characteristic for those applying for STEM subject courses.

In addition, within both of these, the selector needs to consider for applicants in the 21 – 24 age group:

**Table 6.3: Additional considerations for applicants aged between 21 and 24 years**

Selectors should satisfy themselves about the students'	
<ul style="list-style-type: none"> <li>• <b>Motivation</b></li> </ul>	Instrumental Attraction and Hedonism may be strong indicators for this age group. Personal Values may be an additional motivator
<ul style="list-style-type: none"> <li>• <b>Resilience</b></li> </ul>	A <i>negative</i> tendency towards Self-Concept

The importance placed on Instrumental Attraction as a motivating factor might be interpreted as showing how this group place a particular importance on developing career opportunities, possibly as a result of negative experience in the job market as unqualified workers. The addition of Hedonism as a motivational factor here has to be considered in context, strengthening the need for this characteristic among STEM subject applicants and allowing it to appear as a factor when considering applicants for Social Science programmes who fall in this age group.

...and for female applicants:

***Table 6.4: Additional considerations for female applicants***

Selectors should satisfy themselves about the students'	
<ul style="list-style-type: none"><li>• <b>Resilience</b></li></ul>	Positive Self-Concept, and a negative tendency to Social Flexibility.

Although there is no evidence to support such a speculation, it may be that some women feel the need to be determined and strongly focused in order to achieve their goal.

...and for older (25+) applicants:

***Table 6.5: Additional considerations for applicants aged 25 and over***

Selectors should satisfy themselves about the students'	
<ul style="list-style-type: none"><li>• <b>Motivation</b></li></ul>	A negative tendency to Instrumental Attraction, but Hedonism retains importance.

Unlike their younger fellow-students in the 21-24 age-group, these older students are not as motivated by career opportunities. Perhaps students in this group have decided, after pursuing career goals when younger, to seek satisfaction by following a personal interest.

The point being made above is that selectors / interviewers need to think in terms of the particular situation and supplement, adapt or construct particular toolkits for specific needs.

Clearly, there are gaps in the findings where too few students were available for reliable analysis. In particular, students studying Arts and Humanities subjects did not constitute a viable group. It would not be unreasonable to suppose that a

particular and partly distinctive set of attributes may apply to such a group of applicants.

### **6.3: Expert Selectors**

At the beginning of this research, it appeared that admissions decisions for students who lack the qualifications traditionally needed for entry to HE were based largely on the selector's intuition. Thagard (2001) suggests that decision making is best accomplished by combining data with intuition. This concept of informed intuition is appropriate here, using data obtained from the careful, considered use of a toolkit as a blueprint to inform the selector's intuition. However, such a process would, for the best results, need the selector to have specific expertise. Such expertise is likely to be needed in both academic discipline – a sociologist is more likely to successfully apply intuition in selecting a social science student than in selecting a physics student – and in the context of the study to be undertaken, such as foundation level study.

### **6.4: Applying the Toolkit**

Turning now to methods of applying the toolkit, it is anticipated that the expert selector will use measures of the suggested characteristics tailored to the particular circumstances, dependent on resources available. The measures I have used, including the personal attributes questionnaire, may be appropriate in some situations, or selectors may have their own trusted measures. One possible solution would be to use questions taken from such a questionnaire to create scenarios for use in a Multiple Mini-Interview (MMI) situation, a technique that has been shown to be effective with medical students (e.g. Barnett et al. 2015). MMIs were developed in response to a perceived need for improved tools for the

assessment of noncognitive variables when interviewing applicants for medicine programmes (Eva et al., 2004). Briefly, the process involved subjecting applicants to a series of short structured scenarios during which they were required to discuss a given issue (for medical students, the discussions revolved around health issues, but this could be adapted to a range of possible scenarios). An applicant's interpersonal skills during this discussion with an interviewer and associate were observed and noted by the examiner. The technique could be adapted for use outside medical education and may provide a useful framework within which a range of desirable characteristics, as suggested by a toolkit, might be tested.

### 6.5: Risk

It is important that the toolkit does not impose further barriers to admission for students who are already in a vulnerable situation. Some students who do not quite fit the set of characteristics suggested by the toolkit may still be accepted.

In terms of the risks involved, however, it is important to point out that:

- i. While a selector may say he will take the risk, it is really the student who is at risk – probably a bigger risk than that taken by the selector.
- ii. It should be an informed risk (informed by the toolkit and, perhaps, intuition (see Thagard, 2001)).
- iii. The risk should be accompanied by some confidence in the department's ability and/or the student's ability to make good any deficiency.
- iv. It is important to bear in mind that the toolkit comprises attributes to be seen as a whole, each item contributing a relatively moderate amount to that whole.

Simply taking an uninformed risk (uninformed intuition) is irresponsible. It may be that the student should also be made aware of perceived deficiencies so that they enter a course with open eyes.

More importantly, a student who is accepted, but with some perceived deficiencies identified during the selection process, may be offered some support and structured intervention to remediate the perceived deficit as part of the programme. For some students, such support may be needed beyond the foundation year, and this may provide considerable challenges for the receiving academic departments. Such challenges may be greater in elite universities, where departments are sometimes ill-equipped to provide adequate support for Widening Participation students, often preferring instead to concentrate on their more traditional intake of well-qualified students with reliable records of previous achievement and cultural capital.

Given this, I recommend a tentative toolkit as described above.

As the evidence collected relates to Foundation Level students, the findings may be specific to them, although others in other contexts may find these useful to the extent that they can relate or adapt them to their own situation or context.

Bassey's (2000) concept of fuzzy generalisation is of use here. Bassey pointed out that although it might not be possible to generalise findings in their entirety, it is often possible to find them relevant in another context and be able to relate them to that context to support understanding and adaptation for tentative application. For instance, admissions tutors in Higher Education beyond the Foundation Student context may see the relevance of avoiding a 'one size fits all' approach to recruitment, and recognise that different disciplines call for

different personal attributes, and see merit in involving staff from those disciplines who may, almost intuitively, recognise attributes which foster success in their discipline. In addition, some attributes, like conscientiousness, could be more general indicators of potential, and tutors might reflect on how they would recognise it reliably in their contexts. They may also reflect on if and how they might foster certain attitudes and attributes, and whether it is feasible to include that in their courses. In this way, provided that appropriate adjustments were made for different circumstances, it may be possible for others to make useful, if cautious application.

## 6.6: Future Research

Further research could incorporate:

<ul style="list-style-type: none"> <li>Academic Disciplines</li> </ul>	<ul style="list-style-type: none"> <li>Arts and Humanities</li> <li>It may be appropriate to investigate individual disciplines within larger groups, e.g. Law students, included with social scientists in this study</li> </ul>
<ul style="list-style-type: none"> <li>Other Specific Groups</li> </ul>	<ul style="list-style-type: none"> <li>More focused groupings may be helpful, such as:</li> <li>Female, 25+, Social Scientists ...etc.</li> </ul>
<ul style="list-style-type: none"> <li>Further data from this sample</li> </ul>	<ul style="list-style-type: none"> <li>Currently collecting data on results at end of Year 1, the first year of a degree course.</li> <li>Data to be collected on final degree classification</li> </ul>
<ul style="list-style-type: none"> <li>New information from other toolkit users</li> </ul>	<ul style="list-style-type: none"> <li>Data gathered by other users of the toolkit, in other contexts, will inform and enrich the evidence base.</li> </ul>
<ul style="list-style-type: none"> <li>Research on effective interventions for the remediation of noncognitive characteristics linked to success.</li> </ul>	<ul style="list-style-type: none"> <li>Gathering evidence from programmes designed to remediate these attributes.</li> <li>Developing and trialling new programmes of intervention.</li> </ul>
<ul style="list-style-type: none"> <li>Development of whole institution support frameworks</li> </ul>	<ul style="list-style-type: none"> <li>Providing ongoing support for the development and improvement of desired attributes beyond foundation provision, thus removing the onus from academic departments to provide this support.</li> </ul>



It is vital that initiatives to recruit, select and support WP students continue to be developed, using evidence-based best practice. The introduction of the Teaching Excellence Framework (TEF) (Department for Business Innovation & Skills, 2015) will bring its own challenges with respect to WP schemes, when retention becomes one of the indicators used to judge such excellence. WP students, by their nature, are likely to have lower retention rates than more traditional HE students, so an unintended outcome of this new measure could be that institutions will strive to improve retention rates at the cost of the WP initiatives. Those professionals who are engaged in, and committed to, producing a diverse, fairly selected student body must do all they can to support WP students, so as to minimise this effect.

## **Postscript: A Personal Journey**

This study began with a perceived need. Beginning work as an admissions selector in the foundation sector, I was genuinely concerned about making decisions based on inadequate information. When questioned, experienced selectors told me, in various terms, that the process was based largely on intuition. Immediately, I began to seek ways to improve this decision-making process. The search for improvement led me to undertake this study. My skills and knowledge were limited; whilst having an awareness of the process, I had no experience of academic research, nor of any its important components.

Wanting to take advantage of the wealth of experience surrounding me amongst colleagues, I learned about phenomenography and how it could help me to gather useful data from such an important source. It seemed, as I learned about the method, only sensible that current students and those pre-application enquirers who I was meeting to offer information, advice and guidance should be included in this data-collection. My growing confidence with this research method as I sorted and re-sorted the data pool resulted in being able to deliver a presentation about phenomenography to a research forum.

The consideration of research ethics was important, both for the interview process for the phenomenographic study, and as I began to prepare the personal attributes survey that a new student cohort was to be invited to complete. The questionnaires themselves and their administration were also new experiences. Scoring the answers and recording all the data from these questionnaires presented more new challenges and led to new skills, including improved manipulation of spreadsheet functions. These skills were further extended as I

worked to produce charts and tables in order to make presentation of the results of the study as clear as possible.

An important challenge was in learning about the statistical analysis of the collected data. Again, I needed to take what started as basic statistical literacy and turn it into a greater understanding of different ways of relating variables, and the nature of significance values. Having tried multiple linear regression analysis for the data from the personal attributes survey, I found that it added nothing useful to the results of the Pearson correlation tests, so rejected it as unnecessary.

Publishing some of the material from this study as a chapter in an edited book was an exciting and satisfying experience (Moreton, 2016). The published chapter is available in Appendix 4. The skills, knowledge and experience I have gained by undertaking this study serve to inform my teaching as I work to prepare students for undergraduate study in a research-intensive university. The twist in the tail of this study is that what started as a need to identify characteristics linked to successful outcomes for students in HE in order to aid the selection process became, towards the end, a realisation that there may be a much more important reason for identifying such characteristics. If desirable characteristics can be learned or increased, methods for facilitating this should be embraced so that all students have enhanced chances of success. It is an exploration of such possibilities which will be the subject of future study, a process already begun.

## References

- Admissions to Higher Education Steering Group (2004). Fair Admissions to HE: Recommendations for Good Practice' – the Schwartz Report. Available at <http://www.admissions-review.org.uk/downloads/finalreport.pdf> (Accessed 16<sup>th</sup> March, 2014).
- Afzal, H., Ali, I., Khan, M. A., & Hamid, K. (2010). A study of university students' motivation and its relationship with their academic performance. *International Journal of Business and Management*, 5(4): 80-88.
- Agresti, A, and Finlay, B. (2009). *Statistical Methods for the Social Sciences*, Fourth edition. Harlow. Pearson Education.
- Allan, J., McKenna, J. & Dominey, S. (2014). Degrees of resilience: Profiling psychological resilience and prospective academic achievement in university inductees. *British Journal of Guidance and Counselling*, 42: 9-26.
- Bandura, A. (1977). Self-Efficacy: Toward a Unifying Theory of Behavioural Change. *Psychological Review*, 84: 191-215.
- Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York: W.H.Freeman and Company.
- Barnett, R., Winterton, A., Firth, P., Davison, J., Willis, J. & O'Brien, A. (2015). Multiple mini interviews for undergraduate physiotherapy entry in the United Kingdom (UK). *World Confederation for Physical Therapy Congress.2015 Abstracts*, Singapore, 1-4 May 2015. doi.org/10.1016/j.physio.2015.03.043
- Bassey, M. (2010). A solution to the Problem of Generalisation in Educational Research: Fuzzy Prediction. *Oxford Review of Education*, 27 (1): 5-22  
DOI: 10.1080/03054980123773
- Baxter, A., and Hatt, S. (1999). Old and Young Mature Students: Painting a Fuller Picture. *Journal of Access and Credit Studies, Summer 1999*.
- Bouffard-Bouchard, T. (1990). Influence of Self-Efficacy on Performance in a Cognitive Task. *Journal of Social Psychology*, 130 (3): 353-363.
- Boyle, E., Duffy, T. and Dunleavy, K. (2003) Learning styles and academic outcome: the validity and utility of Vermunt's Inventory of Learning Styles in a British higher education setting. *British Journal of Educational Psychology*. 73 (2): 267-290.
- Brennan, J. and Naidoo, R. (2008). Higher Education and the Achievement (and/or prevention) of Equity and Social Justice. *Higher Education*, 56: 287-302
- Burke, P., (2012) *The Right to Higher Education: Beyond Widening Participation*. London: Routledge / Taylor & Francis
- Busato, V., Prins, F., Elshout, J. and Hamaker, C. (2000). Intellectual Ability, Learning Style, Achievement Motivation and Academic Success of Psychology Students in Higher Education. *Personality and Individual Differences*, 29: 1057–1068.
- Callan, P. (2008) The 2008 national Report Card: Modest improvements, persistent disparities, eroding global competitiveness. *The National Center for Public Policy and Higher Education: Measuring up 2008*. Available at: <http://measuringup2008.highereducation.org/>. (Accessed 18.11.2016).
- Cela-Ranilla, J., Gisbert, M., and de Oliveira, J. (2011). Exploring the Relationship Among Learning Patterns, Personality traits, and Academic Performance in Freshmen. *Educational Research and Evaluation*, 17 (3): 175-192.

- Chamorro-Premuzic, T. and Furnham, A. (2003). Personality Predicts Academic Performance: Evidence from two Longitudinal University Samples. *Journal of Research in Personality*, 37: 319-338.
- Chemers, M., Hu, L. & Garcia, B. (2001). Academic Self-Efficacy and First-Year College Student Performance and Adjustment. *Journal of Educational Psychology*, 93 (1): 55-64.
- Cheon, J., Lee, S., Crooks, S. & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behaviour. *Computers & Education*, 59: 1054–1064.
- Conard, M. (2006). Aptitude is not enough: How personality and behaviour predict academic performance. *Journal of Research in Personality*, 40: 339-346.
- Conley, D. (2008). Rethinking College Readiness. *New Directions for higher Education*, 144: 3-13.
- Cook, D. & Artino, A. (2016). Motivation to learn: an overview of contemporary theories. *Medical Education*, 50: 997-1014
- Costa, P and McCrae, R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- Coutu, D. (2002). How Resilience Works. *Harvard Business Review*, May 2002.
- Della Porta, S. (2013). *Increasing conscientiousness to improve health behaviors: Findings from a self-regulation intervention*. Retrieved from: <http://ezphost.dur.ac.uk/login?url=http://search.proquest.com/docview/1355720922?accountid=14533>. (Accessed 12 November, 2016)
- Department for Business Innovation and Skills (2015). *Fulfilling our Potential: Teaching Excellence, Social Mobility and Student Choice*. Available at: [http://www.publicinformationonline.com/uk-parliament/command-papers/2015-2016/9781474124911?query=Teaching Excellence Framework](http://www.publicinformationonline.com/uk-parliament/command-papers/2015-2016/9781474124911?query=Teaching%20Excellence%20Framework). (Accessed 11/11/2016)
- Digman, J. (1990). Personality structure - emergence of the 5-factor model. *Annual Review of Psychology*, 41: 417-440.
- Dornyei, Z. (2001). *Teaching and Researching Motivation*. Harlow: Longman.
- Duckworth, A. and Seligman, M. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, 16 (12): 939-944.
- Duckworth, A., Peterson, C., Matthews, M. & Kelly, D. (2007) Grit: Perseverance and Passion for Long-Term Goals. *Journal of Personality and Social Psychology*, 92:1087-1101
- Duckworth, A. and Quinn, P. (2009). Development and Validation of the Short Grit Scale (Grit–S). *Journal of Personality Assessment*, 91(2): 166-174.
- Duff, A. Boyle, E., Dunleavy, K. & Ferguson, J. (2003). The Relationship between personality, approach to learning and academic performance. *Personality and Individual Differences*, 36: 1907-1920
- Dumfart, B. and Neubauer, A. (2016). Conscientiousness Is the Most Powerful Noncognitive Predictor of School Achievement in Adolescents. *Journal of Individual Differences*, 37(1): 8–15. DOI: 10.1027/1614-0001/a000182. (Accessed 12 November 2016)

- Dweck, C. (2000). *Self-Theories: Their Role in Motivation, Personality and Development*. Philadelphia, PA: Psychology Press.
- Eccles, J., Wigfield, A. and Schiefele, A. (1998). Motivation to Succeed. In Damon, W. and Eisenberg, N. (eds) *Handbook of Child Psychology, 5<sup>th</sup> edition, Vol. 3: Social, emotional and personality development* (pp. 1017-95). New York: Wiley.
- Egerton, M. (2000). Monitoring student flows and characteristics: secondary analyses using the Labour Force Survey and the General Household Survey. *Journal of the Royal Statistical Society Series A – Statistics in Society*, 163: 63-80.
- Ekeblad, E. (1997). On the Surface of Phenomenography: A Response to Graham Webb. *Higher Education*, 33: 219-224.
- 1994 Group of Universities. (2007). Enhancing the Student Experience – Policy Report. Available at <http://www.1994group.ac.uk/studentexperience.php>. (Accessed 18<sup>th</sup> April, 2014).
- Eva, K., Rosenfeld, J., Reiter, H. & Norman, G. (2004). An admissions OSCE: the multiple mini-interview. *Medical Education*, 38 (3): 314-326. DOI: 10.1046/j.1365-2923.2004.01776.x
- Gikandi, D. (2008). *A Happy Pocket Full of Money*. Charlottesville, VA: Hampton Roads
- Graham, J. and Shaffer, D. (2011). Working Together on Widening Access, Admissions and Transition Into Higher Education. In Tight, M. (Ed) *International Perspectives on Higher Education Research, Vol. 6: Institutional Transformation to Engage a Diverse Student Body*, pp 155-168.
- Heckman, J & Rubinstein, Y. (2001). The Importance of Noncognitive Skills: Lessons from the GED Testing Program. *American Economic review*, 91: 95-133
- Higher Education Funding Council for England (1996). *Widening Access to Higher Education: A Report by HEFCE's Advisory Group on Access and Participation*. Available at: [http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/1996/m9\\_96.htm](http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/1996/m9_96.htm), (Accessed 12.08.2014)
- Hill, N. (2007). *Think and Grow Rich*. Radford, VA: Wilder
- Hill, P, & Jackson, J. (2016). The invest-and-accrue model of conscientiousness. *Review of General Psychology*, 20 (2): 141-154.
- Hoare, A., and Johnston, R., (2011), Widening Participation Through Admissions Policy – a British Case Study of School and University Performance. *Studies in Higher Education*, 36 (1): 21-41.
- Hoban, J., Lawson, S., Mazmanian, P., Best, A. & Seibel, H. (2005). The Self-Directed Learning Readiness Scale: a factor analysis study. *Medical Education*, 39: 370–379.
- Johnson, M., Taasobshirazi, G., Kestler, J. & Cordova, J. (2015). Models and messengers of resilience: a theoretical model of college students' resilience, regulatory strategy use and academic achievement. *Educational Psychology*, 35(7): 869-885.
- Khoshaba, D. & Maddi, S. (2001). *HardiTraining*. Irvine, CA: Hardiness Institute.
- Kiyosaki, R. (2011). *Rich Dad, Poor Dad: What the Rich Teach Their Kids About Money, and the Poor and Middle Classes Do Not*. Scottsdale AZ: Plata Publishing.
- Kobasa, S. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37 (1): 1-11.

- Laws, D. (2013). A comparison of GCSE and AS level results as a predictor of getting a 2:1 or above at University. Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/200903/GCSE\\_and\\_AS\\_level\\_Analysis\\_3\\_1.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200903/GCSE_and_AS_level_Analysis_3_1.pdf). Accessed 15th August, 2014.
- LNAT (2014). Available at: <http://www.lnat.ac.uk>. (Accessed 29<sup>th</sup> August, 2014)
- Luszczynska, A., Gutiérrez-Doña, B., & Schwarzer, R. (2005). General self-efficacy in various domains of human functioning: Evidence from five countries. *International journal of Psychology*, 40(2): 80-89.
- Maddi, S. (2006). Hardiness: The Courage to grow from Stresses. *Journal of Positive Psychology*, 1: 160-168.
- Maddi, S., Harvey, R., Khoshaba, D., Fazel, M. and Resurreccion, N. (2009). Hardiness training facilitates performance in college. *The Journal of Positive Psychology*, 4 (6): 566-577.
- Maddi, S., Harvey, R., Khoshaba, D., Fazel, M. & Resurreccion, N. (2012) The Relationship of Hardiness and Some Other Relevant Variables to College Performance. *Journal of Humanistic Psychology*, 52(2): 190-205.
- Marshall, C. (2013). Good Foundations: Prediction of Degree Success in Non-Traditional Students. *Widening Participation and Lifelong Learning*, 15 (2): 22-42.
- Marshall, C. (2016) Stories with a Foundation. In Marshall, C., Nolan, S. & Newton, D. (eds.), *Widening Participation, Higher Education and Non-Traditional Students: Supporting transitions through Foundation Programmes* (pp. 179-188). London: Macmillan.
- Marton, F. (1981). Phenomenography – describing conceptions of the world around Us. *Instructional Science*, 10: 177-200.
- Matthias, J. (2014). *Study of Chinese international students' motivation, resilience and self-efficacy, and their contribution to academic adjustment*. Unpublished work.
- McLachlan, J., Finn, G. & Macnaughton, J. (2009). The Conscientiousness Index: A Novel Tool to Explore Students' Professionalism. *Academic Medicine*, 84(5): 559-565.
- Merriam, S. (2001), Andragogy and Self-Directed Learning: Pillars of Adult Learning Theory. *New Directions for Adult and Continuing Education*, 2001: 3–14. doi:10.1002/ace.3
- Milburn, A. (2012). *University Challenge: How Higher Education Can Advance Social Mobility*. London: Cabinet Office.
- Moreton, I. (2016). Selecting Mature Learners – A Toolkit for Admissions Tutors. In Marshall, C., Nolan, S. & Newton, D. (eds.), *Widening Participation, Higher Education and Non-Traditional Students: Supporting transitions through Foundation Programmes* (pp. 89-103). London: Macmillan.
- Nagaoka, J., Farrington, C., Roderick, M., Allensworth, E., Keyes, T., Johnson, D. & Beechum, N. (2013). Readiness for College: The Role of Noncognitive Factors and Context. *VUE, Fall 2013*. Available at: <https://consortium.uchicago.edu/sites/default/files/publications/VUE%20Noncognitive%20Factors.pdf>. Accessed 18<sup>th</sup> November, 2016)
- Neill J. (2004). *The University Student Motivation and Satisfaction Questionnaire version 2*. (TUSMSQ2). Centre for Applied Psychology, University of Canberra.
- Newton, D.P. and Newton, L.D. (2009). Some student teachers' conceptions of creativity in school science. *Research in science technological education*. 27 (1): 45-60.

- Newton, D.P. (2014) *Thinking with Feeling*. London: Routledge.
- Noftle, E., & Robins, R. (2007) Personality predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal Of Personality And Social Psychology*, 93 (1): 116-130.
- O'Connor, M. & Paunonen, S. (2007). Big Five personality predictors of post-secondary academic performance. *Personality and Individual Differences*, 43: 971–990.
- Panel on Fair Access to the Professions. (2009) *Unleashing Aspiration*. London: Cabinet Office.
- Parry, G. and Wake, C. (Eds) (1990) *Access and Alternative Futures for higher Education*. London: Hodder and Stoughton
- Patchin, S. (2016). *Self-efficacy of college freshmen engaged in STEM outreach*. Retrieved from <http://ezphost.dur.ac.uk/login?url=http://search.proquest.com/docview/1786685001?accountid=14533>. Accessed 18.10.2016.
- Purnell, K & McKavanagh, M (2007). Student Learning Journey: Supporting student success through the Student Readiness Questionnaire. *Studies in Learning, Evaluation, Innovation and Development*, 4, (2): 27-38.
- Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do Psychosocial and Study Skill Factors Predict College Outcomes? A Meta-Analysis. *Psychological Bulletin*, 130 (2): 261-288.
- Roberts, B., Lejuez, C., Krueger, R., Richards, J., & Hill, P. (2014). What is conscientiousness and how can it be assessed? *Developmental Psychology*, 50: 1315–1330.
- Rohn, J. (1996). *Seven Strategies for Wealth & Happiness*. New York: Three Rivers Press
- Sampson, J., Peterson, G., Reardon, R., Lenz, J. (2011). Using Readiness Assessment to Improve Career Services: A Cognitive Information-Processing Approach. *Career Development Quarterly*, 49 (2): 146 – 174.
- Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European journal of psychological assessment*, 18(3): 242.
- Schunk, D., Meece, J. & Pintrich, P. (2014). *Motivation in Education: Theory, Research, and Applications*. 4<sup>th</sup> edn. Boston: Pearson.
- Schwartz Report. (2004). *Fair admissions to Higher Education: Recommendations for good practice*. Available at <http://www.admissions-review.org.uk/consultation.html> (Accessed 16th March, 2014)
- Schwarzer, R., Bäßler, J., Kwiatek, P., Schröder, K., & Zhang, J. X. (1997). The Assessment of Optimistic Self-beliefs: Comparison of the German, Spanish, and Chinese Versions of the General Self-efficacy Scale. *Applied Psychology*, 46(1): 69-88.
- Sedlacek, W. (2004). *Beyond the Big Test: Noncognitive assessment in Higher Education*. San Francisco, Jossey-Bass.
- Sedlacek, W., Benjamin, E., Schlosser, L., & Sheu, H. (2007). Mentoring in academia: Considerations for diverse populations .In Allen, T.& Eby, L.(Eds.),*The Blackwell handbook of mentoring: A multiple perspectives approach* (pp. 259-280). Malden, MA: Blackwell.
- Sedlacek, W. (2011). Using Noncognitive Variables in Assessing Readiness for Higher Education. *Readings on Equal Education*. 25:187-205.



- Sheard, M. and Golby, J. (2007). Hardiness and Undergraduate Academic Study: The Moderating Role of Commitment. *Personality and Individual Differences*. 43: 579-588.
- Shechtman, N., DeBarger, A., Dornsife, C., Rosier, S. & Yarnall, L. (2013). *Promoting Grit, Tenacity and Perseverance: Critical Factors for Success in the 21<sup>st</sup> Century*. U.S. Department of Education. Available at: <http://www.smc.edu/ACG/DistrictPlanningPolicies/GRIT/Documents/OET-Draft-Grit-Report-2-17-13.pdf>. (Accessed 8<sup>th</sup> Nov.2016)
- Smith, J. and Naylor, R. (2001). Determinants of Degree Performance in UK Universities: A Statistical Analysis of the 1993 Student Cohort. *Oxford Bulletin of Economics and Statistics* 63: 29-60.
- SPA (2014) Available at: <http://www.spa.ac.uk/information/admissionstests/>. (Accessed 14<sup>th</sup> August, 2014)
- Srivastava, S, John, O, Gosling, S, & Potter, J. (2003). Development of personality in early and middle adulthood: Set like plaster or persistent change? *Journal of Personality and Social Psychology*, 84 (5): 1041-1053.
- Stipek, D. (2002) *Motivation to Learn: Integrating Theory and Practice*. Boston: Allyn & Bacon
- Thagard, P. (2001). How to Make Decisions: Coherence, Emotion, and Practical Inference. In Millgram, E. (Ed.) *Varieties of Practical Reasoning*. Cambridge, MA: MIT Press
- Tight, M. (2012). *Researching Higher Education*. Maidenhead: Open University Press.
- Tomlinson, C., Brighton, C., Hertberg, H., Callahan, C., Moon, T., Brimijoin, K., Conover, L. & Reynolds, T. (2003), Differentiating Instruction in Response to Student Readiness, Interest, and Learning Profile in Academically Diverse Classrooms: A Review of Literature. *Journal for the Education of the Gifted*. 27, (2/3): 119–145.
- Trautwein, U., Lüdtke, O., Roberts, B., Schnyder, I., & Niggli, A. (2009) Different forces, same consequence: Conscientiousness and competence beliefs are independent predictors of academic effort and achievement. *Journal of Personality and Social Psychology*. 97(6): 1115-1128.
- UKCAT (2014). *What is the UKCAT?* Available at: <http://www.ukcat.ac.uk/about-the-test>. (Accessed 21.08.14)
- Van Bragt, C., Bakx, A., Bergen, T. and Croon, M. (2010). Looking for students' personal characteristics predicting study outcome. *Higher Education*, 61: 59-75
- Young, M., Brown-Welty, S. & Tracz, S. (2010). "The Effects of Self-Efficacy on Academic Success of First-Generation College Sophomore Students". *Journal of College Student Development*, 51(1): 50-64.  
DOI: 10.1353/csd.0.0109 (Accessed 18<sup>th</sup> November, 2016)
- Vermunt, J. (1992). *Learning Styles and Guidance of Learning Processes in Higher Education*. Amsterdam: Lisse Swets and Zeitlinger.
- Wagerman, S. and Funder, D. (2007). Acquaintance Reports of Personality and Academic Achievement: A Case for Conscientiousness. *Journal of Research in Personality*, 41: 221-229
- Walsh, E. (2000). Phenomenographic Analysis of Interview Scripts. In: Bowden, J. & Walsh, E. (eds.) *Phenomenography*. Melbourne: RMIT University Press.
- Walton, J. (1979), Retention, Role Modeling, and Academic readiness: A Perspective on the Ethnic Minority Student in Higher Education, *Personnel and Guidance Journal*, 58(2): 124-128.

- Wang, M, Haertel, G, Walberg, H, (1998). Educational Resilience. Publication Series No. 11, ERIC, EBSCOhost. Available at: <http://files.eric.ed.gov/fulltext/ED419856.pdf>. (accessed 21 August 2014).
- Wang, J. (2009). A study of resiliency characteristics in the adjustment of international graduate students at American universities. *Journal of Studies in International Education*, 13(1), 22-45.
- Ward, T. (2013). A Russell Group Perspective on the Widening Participation Challenge. *Student Recruitment and admissions: Attracting and retaining UK and International Students Forum*. 76 Portland Place, London, 20<sup>th</sup> November. London: Inside Government.
- Wasserstein, R. & Lazar, N. (2016). The ASA's statement on p-values: context, process, and purpose. *The American Statistician*, DOI: 10.1080/00031305.2016.1154108. (Accessed 23<sup>rd</sup> August, 2016).
- Wayman, J. (2002). The utility of educational resilience for studying degree attainments in school dropouts. *The Journal of Educational Research*, 95:167-178.
- Webb, G. (1997) Deconstructioning Deep and Surface: Towards a Critique of Phenomenography. *Higher Education*, 33: 195-212.
- Webb, K, (2014) *Battling with their past and fighting for their future: A study of the experiences and identities of a group of British Army students in UK higher education*, Durham theses, Durham University. Available at Durham E-Theses Online: <http://etheses.dur.ac.uk/10924/> (accessed 18<sup>th</sup> November, 2016)
- Westfall, A, Pisapia, J, & Metropolitan Educational Research Consortium, R (1994), 'Students Who Defy the Odds: A Study of Resilient At-Risk Students. Research Brief #18', ERIC, EBSCOhost, viewed 21 August 2014
- Yeager, D. & Dweck, C. (2012). Mindsets that Promote resilience: When Students Believe that personal Characteristics can be Developed. *Educational psychologist*. 47: 302-314.
- Ziliac, S. and McCloskey, D. (2008). *The cult of statistical significance: how the standard error costs us jobs, justice, and lives*. Ann Arbor, MI: University of Michigan Press.
- Zimmerman, B. (1995). Self-Efficacy and Educational Development. In A. Bandura (Ed.), *Self-Efficacy in Changing Societies* (pp, 202-231). Cambridge: Cambridge University Press.
- Zimmerman, B. (2000). Self-Efficacy: An essential motive to learn. *Contemporary Educational Psychology*, 25: 82-91.

## Appendix 1: Personal Attributes Questionnaire

**Research Consent Form**  
**Personal Attributes Questionnaire**  
**Contact: ...ANONYMISED...**

**Dear Student,**

I am working on a project to help improve the admissions procedure for students like yourself.

For this project, I want to investigate the relationship between students' personal attributes and their success in higher education. I would like you to take part in the survey by answering the questions listed in the next few pages. However, you are under no obligation to participate and can withdraw at any time.

All the data will be fully anonymised and deleted when it has been used. Your participation in this project has no influence on your marks.

In addition, I may wish to use data relating to students, for example, marks and/or demographic data. Again, the data will be fully anonymised and will not be traceable to individual students in any way. That is to say, all details which might identify a student will be removed or changed as appropriate.

If you have any questions or concerns about this process, please discuss it with your Academic Advisor or the Chair of the Foundation Centre Ethics Sub-Committee.

**Please indicate your consent to us using the data in this questionnaire in this way by signing below.**

**Your signature**

**Your name (Please Print)**

**Date**

.....

.....

.....

All personal information held by the Foundation Centre is governed by the Data Protection Act (1998). Full details about the policy and what it means for you can be accessed on the university website here: ...ANONYMISED....

As noted above, you are free to withdraw from the project for any reason, simply by informing me or the Chair of the Foundation Centre Ethics Sub-Committee. This option to withdraw also applies to the use of your anonymised information in this way. Should you wish to withdraw your anonymised data, please email ...ANONYMISED..., Chair of the Foundation Centre Ethics Sub-Committee on ...ANONYMISED..., or by writing to: ...ANONYMISED...

## Section 1

### Personal Background and Conscientiousness

• **Name:**

• **Degree Course:**

• **Age Group:** Under 21                      21 – 24  
25 and over

Please Tick

☐☐☐

• **Who wrote the book:** *Thinking with Feeling: Fostering Productive Thought in the Classroom?*

• **What was the year of publication?**

• **New students were invited to watch Megan’s video “Preparing to Study” on YouTube.**

Please Tick:

I did not watch the video.

☐

I watched the video but did not read any of the articles

☐

I watched the video and read one of the articles

☐

I watched the video and read two of the articles

☐

I watched the video and read all three of the articles

☐

I watched the video, read the articles and contributed to the online discussion

☐

## Section 2

### Motivation

1. Read each statement. Use the scale below to rate how much you agree or disagree and write that number in the rating box.

1: Strongly disagree	2: Disagree	3: Neither agree nor disagree	4: Agree	5: Strongly agree
----------------------	-------------	-------------------------------	----------	-------------------

Why are you attending university?

No	Statements	Rating
1	To understand myself better.	
2	Because it is personally important to me.	
3	Because I genuinely want to help others with my knowledge.	
4	Because I don't know what else to do.	
5	To gain valuable skills for my career.	
6	Because it is a fun place to be.	
7	Because my family will be proud of me.	
8	Because my friends go to university.	
9	Because I want to explore new ideas, new knowledge.	
10	For my personal growth and development.	
11	Because I want to make a bigger contribution to society.	
12	Because it is better than working.	
13	To secure a job for the future.	
14	Because I enjoy the social life.	
15	Because I can get recognition from others for doing so.	
16	Because others expect me to get a degree.	
17	Because I want to explore a subject I enjoy.	
18	Because this is one of my life goals.	
19	Because I want to help to solve society's problems.	
20	Because it gives me something to do.	
21	To enhance my job prospects.	
22	Because I have more freedom away from my parents.	
23	Because it is a prestigious thing to do.	
24	Because other people have told me I should.	

25	Because I want to challenge myself.	
26	Because it is of great personal value to me.	
27	Because I want to improve the world situation.	
28	To avoid being unemployed.	
29	In order to get the qualification.	
30	Because it is a great place to develop friendships.	
31	Because I can get respect from others for doing so.	
32	Because it would disappoint other people if I didn't.	
33	Because I love learning.	
34	Because I am highly interested in doing this.	
35	Because I want to specialise in an area so I can make a great contribution to society.	
36	Because I don't have any better options.	
37	Because it will help set up my future career.	
38	Because I get to know a lot of people.	
39	So that other people would approve of me.	
40	It seems to be the recommended thing to do.	
41	In order to satisfy my intellectual curiosity.	
42	Because this is what I really want to do in my life.	
43	Because I want to be more useful to society.	
44	Because this is my only way out.	
45	So that I can use my degree to earn a lot of money.	
46	Because I can improve my social skills.	
47	Because I want to be a famous person.	
48	Because of social expectations from those around me.	
49	Please state if you have other reasons to go to university.	

### Section 3

#### General Self Efficacy and Resilience

##### 1. General Self Efficacy

In this section we ask you 10 questions about your general self- efficacy. Read each statement. Use the scale below and think about your own personality and rate how much you agree or disagree and write that number in the rating box.

1: Strongly disagree	2: Disagree	3: Neither agree nor disagree	4: Agree	5: Strongly agree
----------------------	-------------	-------------------------------	----------	-------------------

No	Statement	Rating
1	I can always manage to solve difficult problems if I try hard enough.	
2	If someone opposes me, I can find the means and ways to get what I want.	
3	It is easy for me to stick to my aims and accomplish my goals.	
4	I am confident that I could deal efficiently with unexpected events.	
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	
6	I can solve most problems if I invest the necessary effort.	
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	
8	When I am confronted with a problem, I can usually find several solutions.	
9	If I am in trouble, I can usually think of a solution.	
10	I can usually handle whatever comes my way.	

## 2. Personal Resilience

In this section we ask you questions about your Personal resilience. Please read each statement. Use the scale below to rate how much you agree or disagree and write that number in the rating box.

1: Strongly disagree	2: Disagree	3: Neither agree nor disagree	4: Agree	5: Strongly agree
----------------------	-------------	-------------------------------	----------	-------------------

No	Statements	Rating
1	I see the world filled with opportunity even if it is complex.	
2	I believe I am a capable person.	
3	I remain focussed on my study even when it is tough.	
4	I am open minded.	
5	I like to make friends.	
6	When starting an unfamiliar task, I quickly set about a development plan.	
7	I explore unfamiliar situations rather than avoiding them.	
8	During disruption, I can see opportunities rather than just focusing on the problems.	
9	I am confident that if I work hard I will succeed regardless of the situation.	
10	I have a goal in my study.	
11	I am comfortable with different opinions in a discussion.	
11	I find it easy to ask for and accept assistance and support from others.	
12	When there are many tasks to do I will set up priorities to organise my work.	
13	If I want to do something I will actively find a way to do it rather than waiting for the opportunity to come.	
15	There are more opportunities than dangers in this world.	
16	When I face challenges I always find a way of rising to the challenge.	
17	If I am disrupted during a task I can set clear priorities and stay focused on them.	



18	When solving a problem, I will try to use a variety of approaches.	
19	During tough times, I care about the feelings, needs and motivations of others.	
20	I never leave self-directed study tasks to the last minute.	
21	When solving an unfamiliar problem I will try various methods even when I am not sure what the outcome will be.	
22	The world is developing into a better place.	
23	In stressful times I control my feelings and stay positive.	
24	I don't easily give up.	
25	When facing tough times, I keep on seeking solutions to problems.	
26	I share my feelings and concerns with people whom I trust.	
27	I am organised in my study.	
28	I am a proactive person, tending to initiate change rather than reacting to events.	

#### Section 4: Grit

*Here are a number of statements that may or may not apply to you. For the most accurate score, when responding, think of how you compare to most people -- not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!*

1. New ideas and projects sometimes distract me from previous ones.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

2. Setbacks don't discourage me.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

3. I have been obsessed with a certain idea or project for a short time but later lost interest.

- \_ Very much like me ☐

- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

4. I am a hard worker.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

5. I often set a goal but later choose to pursue a different one.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

6. I have difficulty maintaining my focus on projects that take more than a few months to complete.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

7. I finish whatever I begin.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

8. I am diligent.

- \_ Very much like me ☐
- \_ Mostly like me ☐
- \_ Somewhat like me ☐
- \_ Not much like me ☐
- \_ Not like me at all ☐

## Appendix 2: Ethics Consent

....ANONYMISED...

### Foundation Centre STAFF Research Ethics and Data Protection Monitoring Form

Research involving humans by all academic and related Staff and Students in the Foundation Centre is subject to the standards set out in the Department Code of Practice on Research Ethics.

It is a requirement that **prior to the commencement of all funded or un-funded research proposals and/ or scholarship projects** that this form be completed and submitted to the Foundation Centre Research Ethics and Data Protection Sub-Committee. The Committee will be responsible for issuing certification that the research meets acceptable ethical standards and will, if necessary, require changes to the research methodology or reporting strategy.

A copy of the **research proposal** which details methods and reporting strategies must be attached and should be no longer than two typed A4 pages. In addition you should also attach the **participant information sheet and consent form you plan to use**. Please refer to the Foundation Centre Informed Consent and Data Protection Policy for details of what needs to be included.

Please send the signed application form and proposal to the Chair of the Foundation Centre Ethics and Data Protection Advisory Sub-Committee ....ANONYMISED...

Name: ....ANONYMISED...

Title of research project: Admissions Toolkit

### Questionnaire

		YES	NO	Details
	Have you consulted with peers within the Foundation Centre about this project?	x		IF NOT, please discuss your ideas informally with colleagues as well as with the Chairs of the Ethical Review Sub-Committee, the Scholarship Committee and Scholarship Forum before proceeding.
1.	Does your research involve living human subjects?	x		IF NOT, GO TO DECLARATION AT END
2.	Does your research involve only the analysis of		x	IF YES, GO TO DECLARATION AT END

	large, secondary and anonymised datasets?			
3a	Will you give your informants a written summary of your research and its uses?	x		If NO, please provide further details and go to 3b
3b	Will you give your informants a verbal summary of your research and its uses?			If NO, please provide further details
3c	Will you ask your informants to sign a consent form?	x		If NO, please provide further details
4.	Does your research involve covert surveillance (for example, participant observation)?		x	If YES, please provide further details.
5a	Will your information <i>automatically</i> be anonymised in your research?	x		If NO, please provide further details and go to 5b
5b	IF NO Will you explicitly give <i>all</i> your informants the right to remain anonymous?			If NO, why not?
6.	Will monitoring devices be used openly and only with the permission of informants?	x		If NO, why not?
7.	Will your informants be provided with a summary of your research findings?	x		If NO, why not?
8.	Will your research be available to informants and the general public without restrictions placed by sponsoring authorities?	x		If NO, please provide further details
9.	Have you considered the implications of your research intervention on your informants?	x		Please provide full details
10.	Are there any other ethical issues arising from your research?		x	If YES, please provide further details.

#### Further details

Research will include the collection of data by interview and by survey questionnaire.

***Declaration***

- (1.) I have read the ....ANONYMISED... University Principles for Data Protection available here:  
....ANONYMISED...
- (2.) I have read the Department's Code of Practice on Research Ethics and believe that my research complies fully with its precepts. I will not deviate from the methodology or reporting strategy without further permission from the Department's Research Ethics Committee.
- (3.) I understand and agree that any changes to the project design will require the completion of a new Ethics and Data Protection form.

Signed

.....Date:.....

**SUBMISSIONS WITHOUT A COPY OF THE RESEARCH PROPOSAL, INFORMED  
CONSENT FORM AND PARTICIPANT INFORMATION SHEET WILL NOT BE  
CONSIDERED.**

### Appendix 3: AWM Scores.

This Table shows the Average Weighted Mean end-of-year Scores for the sample group. See Chapter 4.

AWM
45.42
69.67
65.17
71.42
56.83
57.33
64.42
59.83
60.67
53.50
75.42
63.92
65.75
72.67
47.67
68.75
55.50
50.58
62.92
61.92
71.67
69.33
44.25
61.67
60.67
63.58
68.33
69.83
55.67
79.67
74.17
65.67
62.33
83.58
74.50
70.50
61.67
56.17
70.08
72.17
59.08
65.00
40.67
60.83
57.50
63.67
79.25
59.92
75.67
54.75
74.83
73.50
55.42
42.67
65.25
49.33
78.17
61.25
84.25
67.92
63.75
76.42
61.67
35.42
57.33
93.17
85.67

## Appendix 4: Book Chapter.

Published as Chapter Six in:

Marshall, C., Nolan, S. & Newton, D. (eds.) (2016), *Widening Participation, Higher Education and Non-Traditional Students: Supporting transitions through Foundation Programmes* (pp. 89-103). London: Macmillan.

### Selecting Mature Learners – A Toolkit for Admissions Tutors

Ian Moreton

#### **Abstract**

*The Foundation programme offers a gateway into Higher Education for mature students, many of whom have been out of formal education for a long time and may also lack academic qualifications often seen as appropriate for the courses they wish to pursue. Collecting evidence from the literature, academics, current and prospective students, I discuss how an admissions 'toolkit' may be developed to allow those who deal with admissions to identify merit and potential amongst applicants.*

#### **Widening Participation and the importance of mature students**

At least in large parts of the West, there is a belief that we should be trying to build a society in which as many people as possible are free to make choices about how they live and free to achieve their potential. The fairest and most acceptable way to achieve this is through Higher Education (Schwartz, 2004, p. 3). This is, of course, an ideological viewpoint stemming from a belief in individual freedom and may not be agreeable in all societies but here, in the UK, widening participation (WP) in Higher Education is at the heart of government policy and embedded in universities' agreements with the Office for Fair Access (OFFA). In a recent report by Alan Milburn (2012), it is argued that every UK university needs to be actively engaged in initiatives to widen participation and make access to its institution fairer. Both engagement with the community – outreach activities – and admissions processes are seen as areas in which universities can improve their WP performance. This focus on WP is not new. Universities have always sought ways of widening their appeal; their survival and growth has depended on finding new students (more broadly, income) beyond the groups already represented. The label 'widening participation' that is used here, though, is more recent, having emerged as a recognised driving force for policies over the last two decades (Higher Education Funding Council for England, 1996; Admissions to Higher Education Steering Group, 2004). Its recognition as an important mechanism for social mobility is well established (Brennan and Naidoo, 2008; Panel on Fair Access to the Professions, 2009). Economic expansion in the mid twentieth century created more opportunity, more 'room at the top' and access to further

and Higher Education became essential for attaining the credentials needed to take advantage of the opportunities which arose. This trend has continued, and today these credentials are essential if an individual is to have a realistic chance of career progression within the 'knowledge economy'.

Non-traditional students, the targets of WP initiatives, are students who are in groups underrepresented in Higher Education. A number of such groups are easily identified, including:

- Members of lower socio-economic groups (LSEs)
- Students with disabilities
- Mature students
- Members of some ethnic minority groups

Other groups may be identified from time to time, such as students from a care background, ex-services personnel, and so on. Tight (2012) suggests that these groups represent the large majority of the adult population, making it perfectly clear that those groups who were traditionally represented in Higher Education were, in fact, an elite minority.

Although these groups of non-traditional students are labelled separately, there are frequent overlaps. A mature member of an ethnic minority group with a disability, for example, can be categorised in a number of ways. Some of the overlaps that occur are of particular interest when considering the importance of one particular group. As we see in the example given, mature students may also be part of other significant groups. A mature student who is also a member of a lower socio-economic group (LSE) is likely to be categorised as mature, but unlikely to be included statistically in the LSE group because of the way in which institutions gather data, often relying on information about parental income and neighbourhood participation. Students who are admitted to degree programmes using WP criteria are not labelled as such, so statistics, which rely on using a range of criteria that might suggest a disadvantaged background, may not truly reflect the progress that has been made with WP initiatives (Hoare and Johnston, 2011). Opportunities for access to Higher Education for mature students, then, have the added benefit of allowing academically able men and women from LSEs, as well as from a wide variety of backgrounds, to graduate as adults, when the disadvantages faced in adolescence may no longer present barriers (Egerton, 2000). There is also some evidence that it may be helpful to provide additional sub-categories within the mature student group. Mature students for undergraduate courses are defined as those being



over 21 at the beginning of the course, but Baxter and Hatt (1999) suggest that students who are over 25 and returning to education have better outcomes than students between 21 and 25, whose education has been interrupted. They argue for the disaggregation of this group into 'old and young mature students'.

It is for mature students that Foundation programmes are particularly useful, providing a pathway into a degree course for those who lack the required levels of skill or attainment for direct entry. In his *University Challenge* report, Alan Milburn (2012, p.54) affirms that Foundation year courses are 'particularly helpful in equipping students from non-traditional backgrounds with the skills necessary to succeed at university', citing The Foundation Centre at [.....] University as 'a superb example'. Figures from academic years 2010, 2011, 2012 and 2013 show that The Foundation Centre, which accounted for an average of 4.3% of the university's yearly undergraduate admissions over these cycles, provided 41.1% of the university's mature entrants.

### **Getting in: the admissions process.**

'Admissions', the process by which students are recruited, selected and offered places at university, has been described as a 'gap' between raising aspirations and the transition to Higher Education (Graham and Shaffer, 2011). It is vitally important, particularly for WP students who may be more easily discouraged, that the applicant experience of the admissions and transition processes is positive.

In the UK, applicants for university places are required to apply through the Universities and Colleges Admissions Service (UCAS). This places them in direct competition with all other applicants for the desired course. Although universities do engage with their local communities, often as part of initiatives to widen participation, applicants can seek access to universities anywhere in the UK. Admissions decisions are generally made by academic staff in the relevant university department, based on information contained within the UCAS application. Key to these decisions are judgements made about an applicant's merit and potential. Academic performance is heavily emphasised as a means of assessing an applicant's merit, with published entry criteria for each course. This performance is measured using previous results such as GCSE and AS exams (although a recent study by Laws (2013) has concluded that AS results add little as predictors of final degree outcomes), and predictions of results in A-levels. Alongside this, a personal statement by applicants gives them an opportunity to 'sell' themselves, not only explaining their passion for the subject to be

studied, but also laying out all the qualities they will bring both to the particular course and to the wider university community. The heavy reliance on academic performance to determine who should gain entry is considered to make a significant contribution to the continuing inequity in the way in which different socio-economic groups are represented in Higher Education, and has been called into question in a number of ways. Students from independent schools, with better staff / pupil ratios and facilities than state schools, have better A-level outcomes (Schwartz, 2004) so are more likely to succeed in gaining entry to the university course of their choice. This effect is more pronounced in elite institutions where entry requirements are higher, further fuelling claims of social inequity. Enhanced performance at A-level by private school pupils does not, however, translate into better performance at university, at the end of which state school pupils may have better degree outcomes (Smith and Naylor, 2001).

With increasing numbers of pupils leaving secondary education with better A-level grades, the need to distinguish between them, particularly for popular courses at elite institutions, has led some groups to introduce admissions tests; new tools for selecting from these high-attaining groups by testing for qualities considered particularly relevant to the course of study. The Supporting Professionalism in Admissions programme (SPA), set up as recommended by the Schwartz report (2004), defines an admissions test as a 'timed, unseen, written, paper-based or online test, usually taken in the academic year prior to admission in the summer/autumn term, or at interview' (SPA, 2014).

The National Admissions Test for Law (LNAT) was introduced in 2004, and is designed to test 'verbal reasoning skills, the ability to understand and interpret information, inductive and deductive reasoning abilities, and the ability to analyse information and draw conclusions' (LNAT, 2014).

For medicine, the UK Clinical Aptitude Test (UKCAT), introduced in 2006, tests aptitude and attitude rather than academic ability, which has already been tested by A-level performance. It also has specific claims about its importance to the WP agenda:

UKCAT is committed to achieving greater fairness in selection to medicine and dentistry and to the widening participation in medical and dental training of under-represented social groups.

(UKCAT, 2014)

It is worth questioning how a test which has been developed to differentiate between high-performing, highly qualified candidates with recent academic experience might realistically be expected to also identify merit in candidates who have been disadvantaged in some way. Evaluation of the test continues.

There are other admissions tests designed to identify, from amongst the pool of high-achievers, students most suited to specific courses. There are mathematics tests, history tests, English tests – the list is long and, as may be expected, the elite Oxford and Cambridge universities use more of them. SPA has worked with UCAS to provide data about the tests (SPA, 2014).

So much for the high-achievers, but the concern that deserving and capable WP students may not be included in this group is very real. Students who do not have the excellent record of academic achievement on which admissions decisions are traditionally based may be capable of succeeding on a degree programme, but their educational disadvantage makes their access to such a programme less likely. Hoare and Johnston (2011, p.25) have suggested ways in which educational disadvantage might arise:

- Personal circumstances –access to the formal support mechanisms normally available to traditional students may be lacking, particularly for mature students. There may also be disabilities that affect ability to study, and family or employment responsibilities;
- Family/household circumstances – including lack of resources, low value placed on education and personal growth, and lack of appropriate role models;
- Neighbourhood/community – again, low value placed on education and personal growth in the student's local environment and peer group, alongside a lack of appropriate role models; and
- Schooling – attendance at schools where precious resources may be diverted to the maintenance of discipline and there is little experience or enthusiasm for promoting university applications, together with a general disregard amongst peers for the value of academic achievement.

Once again, there may be overlaps between the categories. For example, a mature student who attended a poorly resourced school and whose family circumstances placed little value on education is disadvantaged in a number of ways. At the point when he makes a university application,

in the competitive UCAS system, these disadvantages may serve to make it particularly difficult for him to show his academic potential. Aside from qualifications, his access to guidance about writing a personal statement will be limited, as will his access to suitably qualified referees. These factors need to be taken into account by admissions staff when assessing such applications, so as to minimise barriers to satisfying requirements, as laid out in the principles of the Schwartz report (2004).

Taking such factors into account is far from straightforward, and presents significant difficulties for admissions staff. Pre-application engagement with students is particularly helpful for both sides and much time may be spent meeting potential applicants to ensure they have access to all the information they need, advise on what may be the right course for them and guide them through the process. The report of The 1994 Group, *Enhancing the Student Experience* (2007, p.16) noted how influential pre-engagement initiatives could be, suggesting that the student's experience of university goes far beyond the time actually spent there; early engagement is an important aspect of preparation for university life.

Even so, experienced admissions tutors who are skilled at identifying merit and potential outside the confines of outstanding school grades and between the lines of personal statements, when asked how they do it, have difficulty articulating the processes they use. This is problematic, first because it is difficult to pass on these skills to new staff, and second because if these processes cannot be articulated, they cannot be communicated to aspiring applicants. Transparency in admissions is another of the guiding principles that formed the core of the Schwartz report, so it is important that processes used in selecting students can be published, and in a way that can be understood by applicants. It has been suggested that achieving this goal, although given much attention by institutions, policy-making bodies and regulators, still has some way to go, and the focus needs to be on the applicant experience.

### **Fair access**

If we are to succeed in the WP aims of fair and wider access to Higher Education and continue to improve the diverse nature of our student body, ways of removing barriers to access for educationally disadvantaged groups need ongoing development, informed by evidence and research. Contextual data helps institutions to identify which students may be disadvantaged in some way, and some of this data is collected and disseminated by UCAS, but it is not helpful in identifying merit and potential. If we are to identify students with merit, but without conventional academic credentials, and the potential to do well at

university, we need to target the qualities that contribute to student success. Personal qualities that may lead to successful outcomes are to be investigated. Before we look at these qualities, it may be helpful to give an idea of what we mean by 'success'.

### **Success in Higher Education for the non-traditional student**

In the context of undergraduate entry to Higher Education, it is reasonable that success should be measured by degree outcome. Measurements such as completion of the degree programme and degree classification are appropriate. For this study, which is investigating possible predictors of outcomes for non-traditional students entering Higher Education through a Foundation programme, a measure of students' success could arguably also be their outcomes at the end of the first year of the degree course, since at this stage as well as at graduation, their outcomes can be compared with those of traditional students entering via the conventional route.

### **Personal qualities**

Of the 'Big Five' personality descriptors: neuroticism, extraversion, conscientiousness, agreeableness, openness to experience (Digman, 1990), the construct which has been most often linked to student success is conscientiousness. According to Trautwein et al. (2009), individuals who exhibit conscientiousness are characterised as being hardworking and industrious, systematic, dutiful and striving for achievement, so it is not surprising that it is the Big Five factor most commonly connected with success and achievement. Many studies have explored this connection. Noffle and Robins (2007) found that conscientiousness was a strong predictor of high school and college GPA. Wagerman and Funder (2007) found conscientiousness to be 'a valid and unique predictor of college performance'. Cela-Ranilla, Gisbert and de Oliveira (2011) conclude that academic performance is positively influenced by conscientiousness. In a recent study of factors affecting academic success at [.....] University's Foundation Centre, Marshall (2013, p.36) found that 'using previous study at A-level for mature, non-traditional students is not the best indicator of potential, but that attitudinal attributes, specifically those correlated with conscientiousness are much better indicators of success'. In The Netherlands, a study conducted by Van Bragt et al. (2010) confirmed a strong positive correlation between conscientiousness and academic performance, not only in terms of grades, but also in terms of continuance. Apart from gaining more academic credits, students with higher scores on conscientiousness were found to be less likely to drop out. The Netherlands study also found a negative correlation between academic success and students' scores on the learning conceptions of

Ambivalence and Lack of Regulation. Ambivalence is described as having a variety of motivations to learn, but none in particular. Lack of Regulation describes a student who does not know what, when or why to do things. The significance of this finding is that we should be aware of possible characteristics or orientations which have negative correlations with successful outcomes, as these indicators may be as important as those which have positive correlations.

Hardiness, with its component constructs of control, commitment and challenge, have also been linked to students' success (Kobasa, 1979). Control is demonstrated by those who overcome difficulties so as to continue to exercise control over what is happening. Commitment is demonstrated by those who feel closely involved with (and committed to) their activities, so that stressful events are mitigated by sense of purpose. Challenge is demonstrated by those who embrace, and are stimulated by, change (Maddi, 2006). A study conducted by Sheard and Golby (2007) among undergraduate students at a North-East UK university, found that the hardiness construct of commitment was significantly correlated with academic success. Overall hardiness was also found to have a moderating effect on performance but, surprisingly, challenge showed a negative correlation.

Motivation to learn is central to students' success. The motivated student's beliefs lead to constructive behaviour that focuses on what is needed to produce successful outcomes. According to Dornyei (2001, p.18), motivation is highest when people are competent, have sufficient autonomy, set worthwhile goals, get feedback and are affirmed by others. Vermunt (1992) described five different motivational orientations:

1. Certificate oriented; the qualification is the primary focus.
2. Vocationally oriented; the focus is on a particular career pathway and becoming part of a community of practice.
3. Self-test oriented; the driving force is self-proof and satisfaction in extending personal capabilities.
4. Personally interested; a passion for the subject itself.
5. Ambivalent oriented; motivations to learn exist, but are not clearly defined.

Unsurprisingly the last category here, ambivalence, has been shown to have a negative correlation to success, as mentioned above (Van Bragt et al., 2010).

The psychological study of motivation is complex and dynamic, historically changing from a drive perspective which was biologically based, through behavioural models to a cognitive perspective. Central themes in more recent work are the role of affect and less conscious processes (Eccles, Wigfield and Schiefele 1998, cited in Dornyei 2001, p.19). These themes are outside the scope of this study, which aims to explore relationships between personal attributes and success in Higher Education, rather than exploring the nature and construction of the attributes themselves, but the importance of motivation as a factor influencing success cannot be overstated. A student's motivation to study will have a direct bearing on why they want to study, how long they will sustain the study and how hard they will work towards their goals.

Self-efficacy, an important mediator of motivation, has been offered as a significant factor bearing on student performance, and it should be considered along with the other factors. Described as 'the belief in one's capabilities to organize and execute courses of action required to produce given attainments' (Bandura, 1997, p.3), self-efficacy asks the question 'can I do this?' When the question is applied by a student to either distal or proximal goals, it is an essential component of motivation, and a student who answers in the negative may set lower goals. Self-efficacy is, however, subject to change through experience – particularly repetitive experience (Bandura, 1977) – so that students who are educationally disadvantaged may have lower levels of self-efficacy as a direct result of this disadvantage. Rather than using this attribute, which is linked to success (Zimmerman, 1995), as a factor to be considered when selecting students, it may be more appropriate to provide remediation within the learning and teaching process that will help to reinforce positive self-efficacy.

Self-efficacy is also a contributor to resilience, another important factor in student success. Resilience is not easy to define, but often easily recognised. Films like *The Pursuit of Happyness* [sic], based on the life of Chris Gardner who, while caring for his five-year-old son, battled with homelessness and destitution as he worked to make a better life for them; lives of public figures like Nelson Mandela, who inspired a generation worldwide; fairy tales like *Cinderella*; all present us with characters who display resilience. They succeed 'against the odds', so that we admire them and are drawn to them. As well as showing self-efficacy, resilient individuals tend to be optimistic and goal oriented, have coping skills and take personal responsibility for actions and outcomes. According to Wang et al. (1998, p.3), resilient individuals exhibit a high level of

engagement and a sense of 'personal agency'. Their study goes on to underline the link between these qualities and educational attainment.

### **Phenomenography**

As we have seen, a review of the literature has provided a variety of evidence about what contributes to a student's success in Higher Education, but it would be a mistake to ignore another rich source of valuable information. Foundation centre staff have a wealth of experience in teaching, guiding and mentoring non-traditional students, and their conceptions, based on this wealth of experience, of what characteristics contribute to successful outcomes for students, can be a valuable addition to this study. Students themselves may also have a valid contribution to make based on their own reflections. It may also be of interest to explore conceptions of what may be needed for success among pre-application students; those who are beginning to engage with a Foundation centre for information, advice and guidance. These three disparate groups may be expected to have quite different conceptions, with experienced Foundation centre staff having a more considered and authoritative voice. Exploring all three voices was considered important, to add depth and balance to the study.

### **Method**

Gathering data of this type, in which participants' conceptions are explored, has been successfully accomplished using Marton's phenomenographic method (e.g. Newton and Newton, 2009), and it is this method that was used here. Participants were interviewed and their responses recorded. To ensure minimum influence on the responses of the participants, there was no preparatory questionnaire and interviewees were asked to respond to the question: *What qualities are important for a non-traditional student to be successful in Higher Education?* Some adjustment to the question was made when interviewing students, so as to ensure there was no confusion about what was meant by 'non-traditional students'. In these cases the question was couched in terms that enabled the interviewee to identify him- or herself in relation to the question. Interviewing techniques were used to elicit maximum response, clarifying and extending, without influencing the content of that response. Most interviews lasted between ten and fifteen minutes. Responses were then transcribed from notes and audio recordings into a series of statements. Those statements, colour coded to indicate their origin (colleague; current student; potential student) and printed separately, became the data pool. Included in this pool were, for example, 'An attitude that does not expect to be spoon-fed with answers', 'My



motivation was the children – I want to inspire them’, ‘Almost anybody has the ability, if the circumstances are right, to get a degree.’

Using an iterative process as described by Newton and Newton (2009), the pool was sorted, then re-sorted into groups containing statements with something in common. The re-sorting process led to the evolution of groups that were ‘self consistent and mutually exclusive’. The groups were labelled and their characteristics listed. These groups, then, formed the *categories of description* described by Marton (1981).

## **Results**

The Categories of Description that emerged from the sorting of the data pool were in two groups:

### **1. Driving Force:**

- Interest in what they want to study
- Interest in learning
- Desire to improve themselves
- A need for change

Included in this category are both intrinsic and extrinsic motivation.

### **2. Certain Assets:**

- Genetic endowment such as intelligence
- Habits of mind such as conscientiousness, persistence and determination
- Self beliefs such as self-efficacy
- Acquired ‘skills’ such as thinking and learning skills, emotion coping skills, knowledge and know-how

There is insufficient space here to list the details of responses in each category; some example responses are included above. Surprisingly, there were many similarities between the responses of the three disparate groups of interviewees, although the degree of sophistication in describing concepts was, understandably, varied.

## **Towards a Toolkit**

This chapter has no conclusion, because the work is ongoing and real conclusions are yet to be reached. Having reviewed some of the literature and collected concepts of what it takes to be a successful student from colleagues, current students and potential students, the work of producing a toolkit for use by admissions selectors has begun. During

induction, students enrolling on courses at the Foundation Centre were invited to complete a questionnaire designed to gauge conscientiousness, self-efficacy and resilience, motivation and grit (hardiness). Results from this survey, combined with the outcomes of the phenomenographical study and evidence from the literature, will be compared with students' results at various stages, both during their year at the Foundation Centre and beyond. It is hoped that relationships that emerge between those personal qualities suggested by responses to this and any future survey, and a student's success in Higher Education, will help to inform future practice. It should be emphasised, however, that all efforts will be made to avoid creating new and artificial barriers to entry for the very non-traditional students we are seeking to support. The toolkit, consisting of 'measures' of the characteristics found to be potentially useful, is intended not as a means of selection, but as a means by which selectors can make informed decisions at all stages of the admissions process. Early indications are that selection will be best accomplished by selectors who are expert in the field; the successful physics student, for example, may have different personal qualities to the successful sociology student. It is anticipated that 'measures' which form the toolkit will inform the intuition of these expert selectors as they make their decisions.

## REFERENCES

Admissions to Higher Education Steering Group (2004) 'Fair Admissions to HE: Recommendations for Good Practice' – the Schwartz Report. Available at <http://www.admissions-review.org.uk/downloads/finalreport.pdf>

Bandura, A. (1977) Self-Efficacy: Toward a Unifying Theory of Behavioural Change. *Psychological Review*, 84, pp191-215.

---. (1999) *Self-Efficacy: The Exercise of Control*. New York: W.H. Freeman and Company.

Baxter, A. and Hatt, S. (1999) Old and Young Mature Students: Painting a Fuller Picture. *Journal of Access and Credit Studies*, Summer 1999.

Brennan, J. and Naidoo, R. (2008) Higher Education and the Achievement (and/or prevention) of Equity and Social Justice. *Higher Education*, 56, pp287-302

Burke, P. (2012) *The Right to Higher Education: Beyond Widening Participation*. London: Routledge / Taylor & Francis.

Cela-Ranilla, J.M., Gisbert, M., and de Oliveira, J.M. (2011) Exploring the Relationship Among Learning Patterns, Personality traits, and Academic

Performance in Freshmen. *Educational Research and Evaluation*, 17(3), pp175-192.

Digman, J. M. (1990) Personality Structure - Emergence of the 5-Factor Model. *Annual Review of Psychology*, 41, pp417-440.

Eccles, J., Wigfield, A. and Schiefele, A. (1998) Motivation to Succeed, in Damon, W. and Eisenberg, N. (Eds) *Handbook of Child Psychology, 5<sup>th</sup> edition, Vol. 3: Social, emotional and personality development*. New York: Wiley, pp1017-1095.

Egerton, M. (2000) Monitoring student flows and characteristics: secondary analyses using the Labour Force Survey and the General Household Survey. *Journal of the Royal Statistical Society Series A – Statistics in Society*, 163, pp63-80.

Graham, J. and Shaffer, D. (2011) Working Together on Widening Access, Admissions and Transition Into Higher Education, in Tight, M. (Ed) *International Perspectives on Higher Education Research, Vol. 6: Institutional Transformation to Engage a Diverse Student Body*, Emerald Group Publishing Limited, pp155-168.

1994 Group of Universities (2007) *Enhancing the Student Experience – Policy Report*. Available at <http://www.1994group.ac.uk/studentexperience.php>

Higher Education Funding Council for England (1996) *Widening Access to Higher Education: A Report by HEFCE's Advisory Group on Access and Participation*. Available at: [http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/1996/m9\\_96.htm](http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/1996/m9_96.htm)

Hoare, A. and Johnston, R. (2011) Widening Participation Through Admissions Policy – a British Case Study of School and University Performance. *Studies in Higher Education*, 36(1), pp21-41.

Kobasa, S.C. (1979) Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37(1), pp1-11.

Laws, D. (2013) A comparison of GCSE and AS level results as a predictor of getting a 2:1 or above at University. Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/200903/GCSE\\_and\\_AS\\_level\\_Analysis\\_3\\_1.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200903/GCSE_and_AS_level_Analysis_3_1.pdf) (Accessed 15th August, 2014).

LNAT (2014) Available at: <http://www.lnat.ac.uk> (Accessed 29<sup>th</sup> August, 2014.)

Maddi, S. (2006) Hardiness: The Courage to Grow from Stresses. *Journal of Positive Psychology*, 1, pp160-168.

Marshall, C. (2013) Good Foundations: Prediction of Degree Success in Non-Traditional Students. *Widening Participation and Lifelong Learning*. 15(2) pp22-42.

Marton, F. (1981) Phenomenography – describing conceptions of the world around us. *Instructional Science*, 10, pp177-200.

Milburn, A. (2012) *University Challenge: How Higher Education Can Advance Social Mobility*. London: Cabinet Office.

Newton, D.P. and Newton, L.D. (2009) Some student teachers' conceptions of creativity in school science. *Research in science technological education*, 27(1), pp45-60.

Newton, D.P. (2014) *Thinking with Feeling*. London: Routledge.

Noftle, E. and Robins, R. (2007) Personality predictors of academic outcomes: Big five correlates of GPA and SAT scores. *Journal Of Personality And Social Psychology*, 93(1), pp. 116-130.

Panel on Fair Access to the Professions (2009) *Unleashing Aspiration*. London: Cabinet Office.

Parry, G. and Wake, C. (Eds) (1990) *Access and Alternative Futures for Higher Education*. London: Hodder and Stoughton.

Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., and Carlstrom, A. (2004) Do Psychosocial and Study Skill Factors Predict College Outcomes? A Meta-Analysis. *Psychological Bulletin*, 130(2), pp261-288.

Schwartz Report (2004) Fair admissions to Higher Education: Recommendations for good practice. Available at <http://www.admissions-review.org.uk/consultation.html>

Sheard, M. and Golby, J. (2007) Hardiness and Undergraduate Academic Study: The Moderating Role of Commitment. *Personality and Individual Differences*. 43, pp579-588.

Smith, J. and Naylor, R. (2001) Determinants of Degree Performance in UK Universities: A Statistical Analysis of the 1993 Student Cohort. *Oxford Bulletin of Economics and Statistics* 63 pp29-60.

SPA (2014) *Supporting Professionals in Admissions*, Available at: <http://www.spa.ac.uk/information/admissionstests/> (Accessed 14<sup>th</sup> August, 2014.)

Stipek, D. (2002) *Motivation to Learn: Integrating Theory and Practice*. Boston: Allyn & Bacon.

Tight, M. (2012) *Researching Higher Education*. Maidenhead: Open University Press.

Trautwein, U., Lüdtke, O., Roberts, B., Schnyder, I., and Niggli, A. (2009) Different forces, same consequence: Conscientiousness and competence beliefs are independent predictors of academic effort and achievement. *Journal Of Personality And Social Psychology*, 97(6), pp1115-1128.

UKCAT (2014) *What is the UKCAT?* Available at: <http://www.ukcat.ac.uk/about-the-test>. (Accessed 21st August 2014.)

Van Bragt, C., Bakx, A., Bergen, T. and Croon, M. (2010), Looking for students' personal characteristics predicting study outcome. *Higher Education*, 61, pp59-75.

Vermunt, J. (1992) *Learning Styles and Guidance of Learning Processes in Higher Education*. Amsterdam: Lisse Swets and Zeitlinger.

Wagerman, S. and Funder, D.(2007) Acquaintance Reports of Personality and Academic Achievement: A Case for Conscientiousness. *Journal of Research in Personality*, 41, pp221-229.

Wang, M., Haertel, G., Walberg, H., Mid-Atlantic Lab. for Student Success and National Research Center on Education in the Inner Cities (1998) Educational Resilience. Publication Series No. 11, ERIC, EBSCOhost, viewed 21 August 2014.

Ward, T. (2013) A Russell Group Perspective on the Widening Participation Challenge. *Student Recruitment and admissions: Attracting and retaining UK and International Students Forum*. 76 Portland Place, London, 20<sup>th</sup> November. London: Inside Government.

Westfall, A., Pisapia, J., and Metropolitan Educational Research Consortium (1994) Students Who Defy the Odds: A Study of Resilient At-Risk Students. Research Brief #18, ERIC, EBSCOhost, viewed 21 August 2014.

Zimmerman, B. J. (1995) Self-Efficacy and Educational Development. In A. Bandura (Ed), *Self-Efficacy in Changing Societies*. Cambridge: Cambridge University Press, pp202-231.